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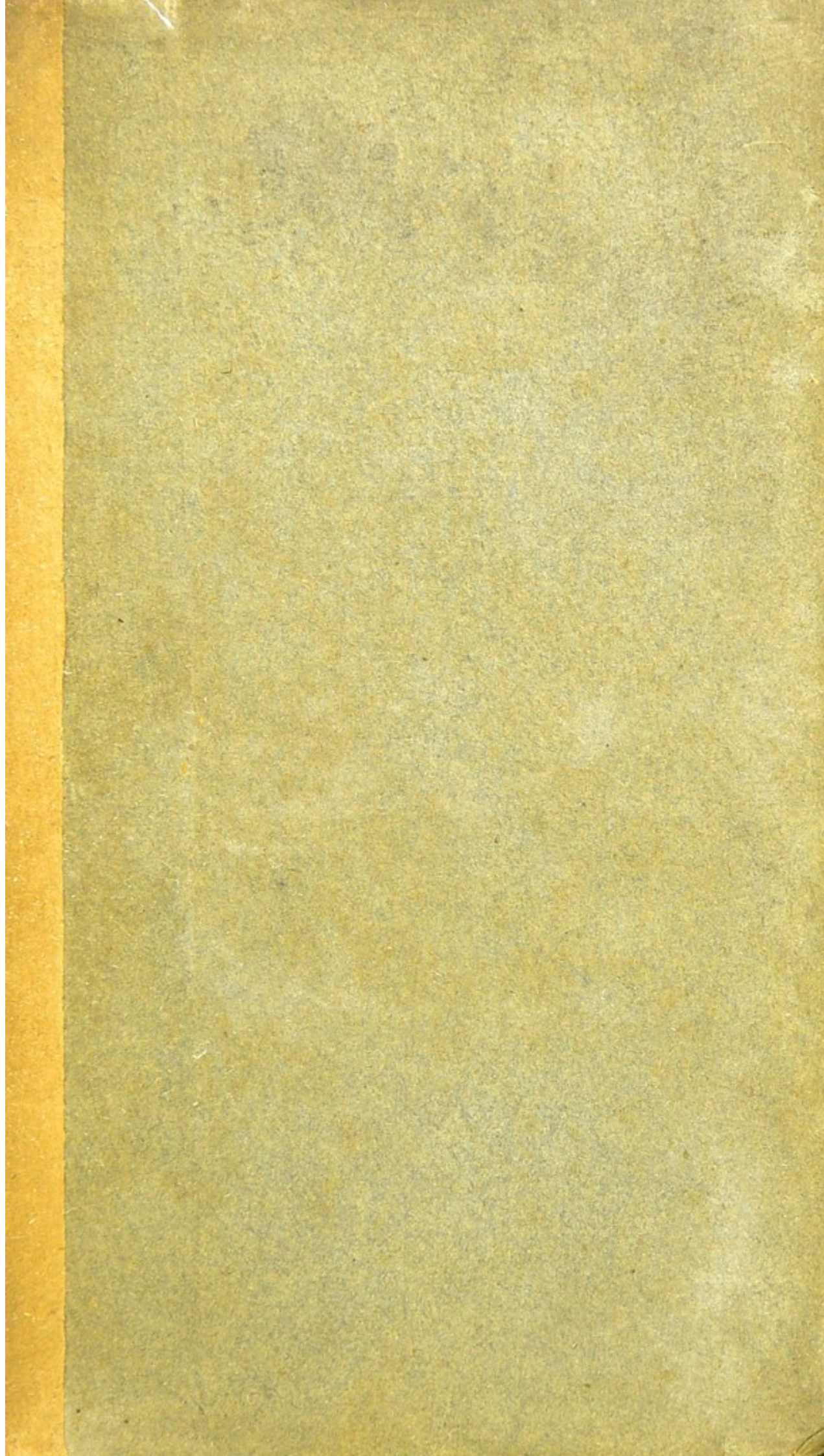
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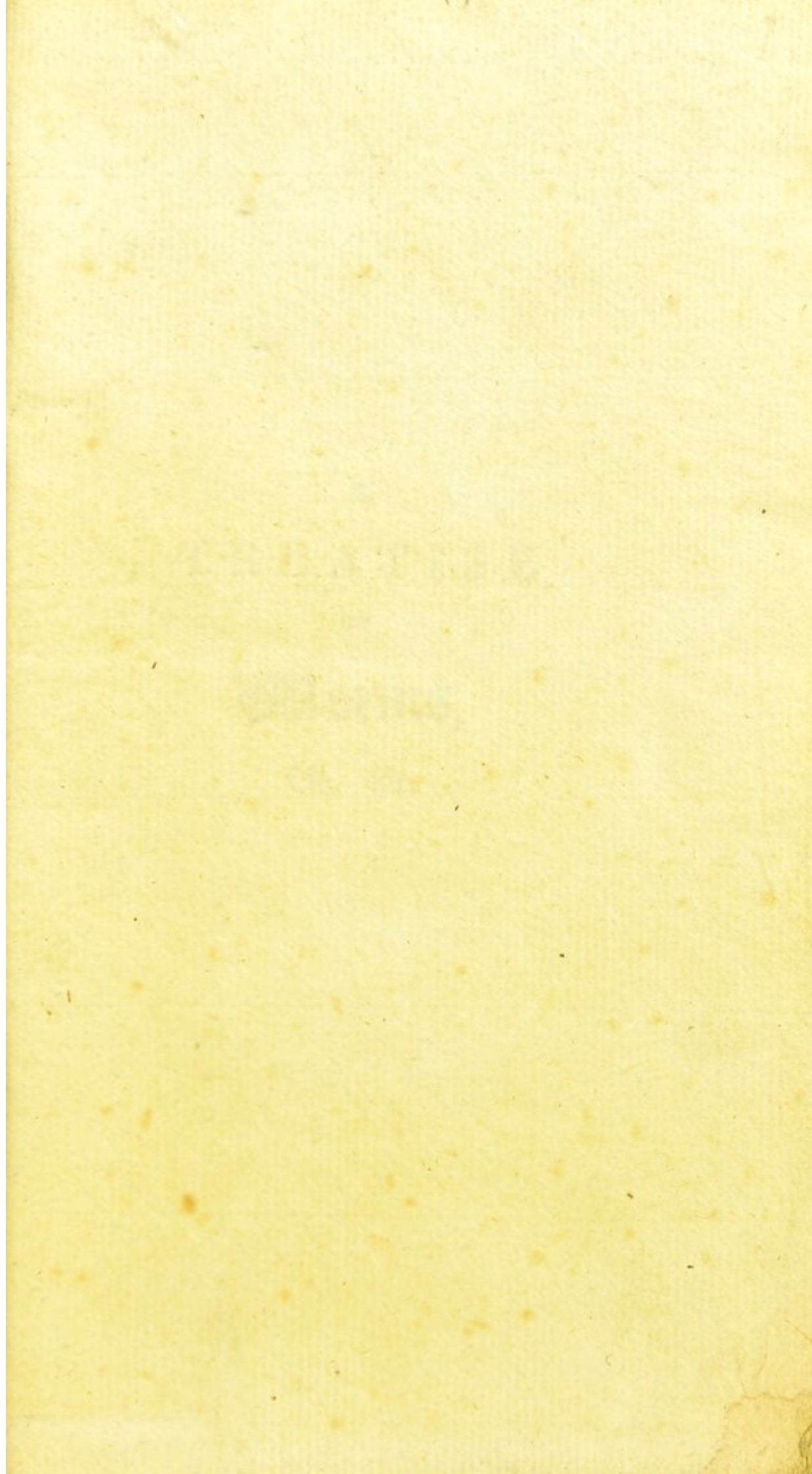


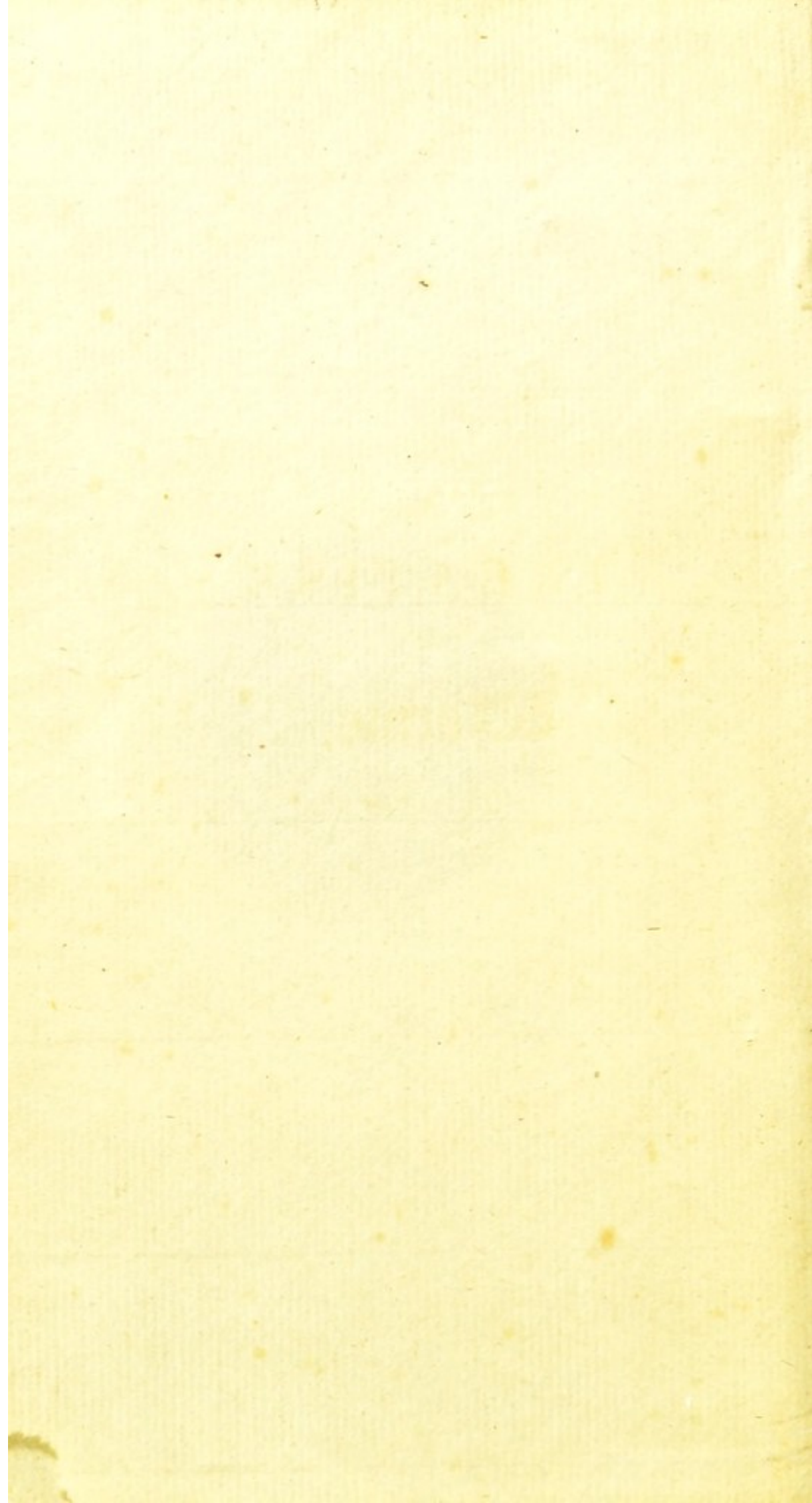
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A
TREATISE
ON

Worms,

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A
TREATISE
ON
Worms,
AND
OTHER ANIMALS

WHICH INFEST

THE HUMAN BODY;

*With the most speedy, safe, and pleasant
Means of Cure.*

~~~~~  
BY T. BRADLEY, M. D.

OF THE ROYAL COLLEGE OF PHYSICIANS, LONDON,  
SENIOR PHYSICIAN TO THE WESTMINSTER  
HOSPITAL, AND THE ASYLUM FOR  
FEMALE ORPHANS, &c. &c.

~~~~~  
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TO
MATTHEW BAILLIE, M. D.

PHYSICIAN TO HIS MAJESTY,

&c. &c. &c.

DEAR SIR,

The personal kindnesses you have shewn me would direct my heart; the success with which you have illustrated this branch, as well as many others of our science, would guide my judgment; and the rank you hold in the profession, would sway my ambition, to obtain the sanction of your name for this my first Essay, as well as publicly to declare with what esteem and regard I am,

Dear Sir,

Your obliged humble Servant,

THOS. BRADLEY.

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PREFACE.

MANY authors who have written on Domestic Medicine, and others who have treated of the Diseases of Children, have made some mention of WORMS ; but all that I have consulted pass over them in a very cursory and superficial manner, as if they thought the subject of very little importance. Yet these same authors mention symptoms suffi-

ently formidable to demand the most serious attention ; although they neither distinguish the different kinds of Worms, nor the symptoms peculiar to each. When they come to the treatment or cure, they mention some very good vermifuges, but they are defective in not discriminating those which are best adapted to each particular kind of them.

They also pay so little attention to the *form* of their remedies, that I am persuaded many children would not be able to take them in the manner they prescribe.

It would be desirable to give

choice of remedies to be used in the cure of each particular sort of Worms, with a view to guard against particular aversions; and few people are without some. Many cannot take rhubarb, more cannot take rue, hellebore, or bears-foot, assafætida or sagapenum, and yet these are powerful vermifuges; and many cannot swallow a pill without chewing it. On these accounts, the forms of the remedies should be so varied as to suit every age, peculiarity, and constitution.

This is attempted to be done, in the following pages, and the requisite distinctions and discrimina-

tions are given. The only work I have seen, which has the appearance of a regular treatise on Worms, written expressly on that particular subject, is Mr. Chamberlaine's Practical Treatise on Cowhage or Cow-itch.

This valuable work, though written with the avowed intention of recommending his favourite vermifuge *only*; does, notwithstanding, contain a very good, although a short account, of the several kinds of Worms, referring to Dr. Hooper's descriptions and beautiful plates. But he mentions no other vermifuge, with commen-

dation, but the stizolobium, al-
 though he allows that it is not
 efficacious in all cases of *Tape*
Worms, even when “given in
 “ double and treble quantity, and
 “ aided by *limatur : stanni* (tin-
 “ filings) liberally exhibited ;” and
 farther on he says, “ For the Tape
 “ Worm, long experience has
 “ taught me, that the Cowhage does
 “ not prove so effectual as against
 “ the other Worms, unless the
 “ quantity of the *setæ* (bristles) be
 “ doubled. In very obstinate cases,
 “ I sometimes find it necessary to
 “ increase the quantity of *setæ*
 “ (the Cowitch) even to a threefold

“ proportion ; for they will not
 “ easily be made to let go their
 “ hold (of the intestines), of which
 “ they are as tenacious as they are
 “ of life.”

The above very candid declaration sufficiently proves that his Cowhage is not the specific for the cure of the Tape Worm. We shall speak of the great difficulty of this cure when we treat of that particular kind of Worm.

These deficiencies, or neglects of my predecessors, I have endeavoured to supply from all the sources I could collect, as well as my own experience.

Having given the best methods in my power for getting rid of the animals that infest the *internal* parts of the body ; I did not think that I had completed the object proposed, unless I also gave some account of those that harass the exterior parts of the body, together with the safest and most expeditious mode of destroying them. These are almost as numerous as those which inhabit the interior.

I have been very short in this part of my subject, because the remedies are very simple, and very easily applied ; and some of the

animals are never found in these climates.

I did not judge it in any degree connected with my subject to mention those occasional visitors, which, though often troublesome, may be avoided or removed by an attention to cleanliness, and keeping proper means of defence at hand.

Another objection to the Treatises already published, on the subject of Worms, is, that they abound in Latin expressions, and technical language, which cannot be understood by readers in general, for whose use this small tract is designed. Whenever I have judged it necessary to

use any such terms, or expressions, I immediately give the plain English of them, or a sufficient explanation. But, although this is written in so plain a manner as to be easily understood by every one that can read, it is hoped that medical practitioners will here find some things worthy of their attention.

T. B.

and any such terms of expression
 immediately give the plain English
 of them, or a sufficient explanation
 but although this is written in so
 plain a manner as to be easily un-
 derstood, by every one that can
 read, this does not mean that the
 things will be understood as things
 worthy of their attention. In a
 word, the only way to make
 to be understood is to make the
 words, phrases, &c. plain.
 The only way to make the
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 The only way to make the
 words, phrases, &c. plain is to
 make the words, phrases, &c. plain.

Explanation of the Plates.

PLATE I,

The Ascaris Lumbricoides, or First Species.

Fig. I. represents the whole Worm.

a, the head with the three minute papillæ.

b, the papillæ or vesicles magnified.

c, the depressed band and punctiform aperture.

d, the tail.

e, the portion which sometimes escapes from the bowels of the animal.

Fig. II. represents the uterus and its appendages.

Fig. III. represents the viscera in their natural situation ; the sides of the skin being fastened down by pins.

PLATE II.

The Ascaris Vermicularis, or Second Species.

Fig. I. represents the Worm in its natural size.

Fig. II. and III. the same magnified.

a, the organs of generation, through which many ova and young Worms have been observed to escape.

Fig. IV. *The Tænia osculis superficialibus*; (with its ovaria injected) or the fifth species.

Fig. V. The same with the superficial oscula in the middle of each joint. Both these figures are taken from the largest portions of the Worm nearest the rounded tail.

PLATE III.

The Tricuris Vulgaris, or Third Species.

Fig. I. and II. represent the natural size of this
Worm:

Fig. III. the same magnified.

a, the head.

c, the proboscis.

d, the intestinal canal.

b, the tail.

PLATE III.

The Tænia osculis marginalibus, or the Fourth Species.

Fig. IV. The natural size of parts of this Worm and its joints.

a, a, a, a, The marginal oscula.

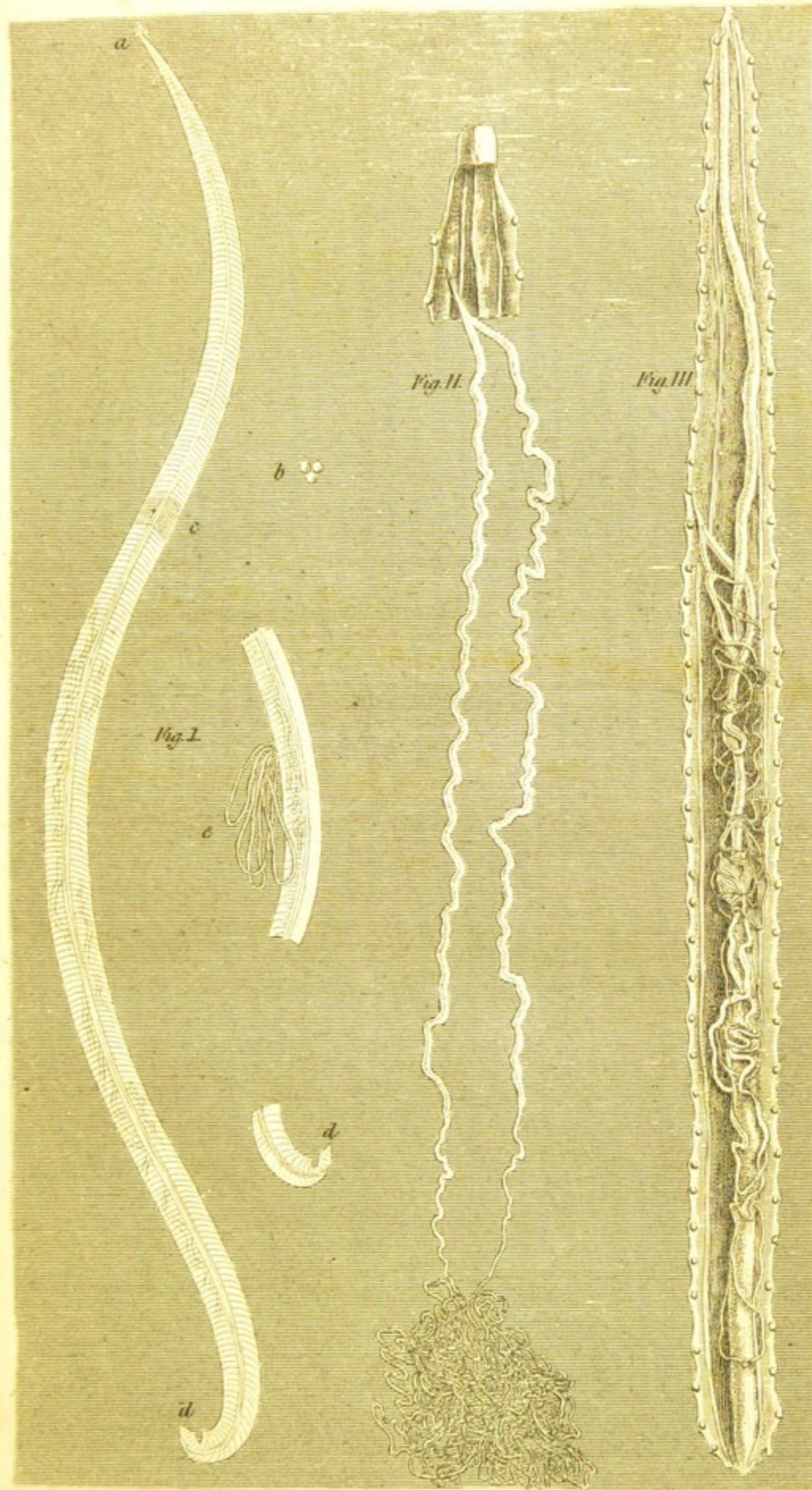
Fig. V. A portion injected.

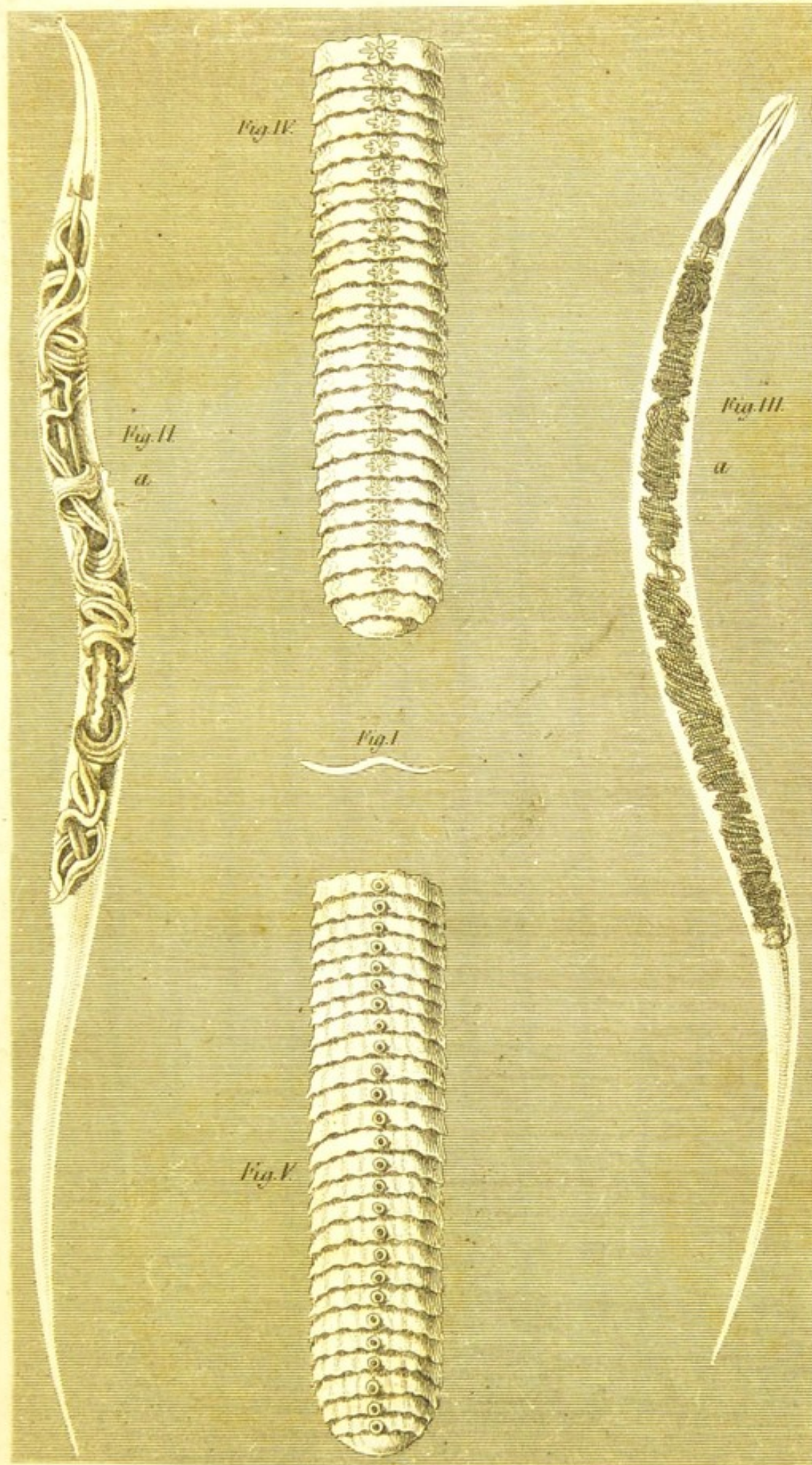
Fig. VI. The head and its contiguous joints of the natural size.

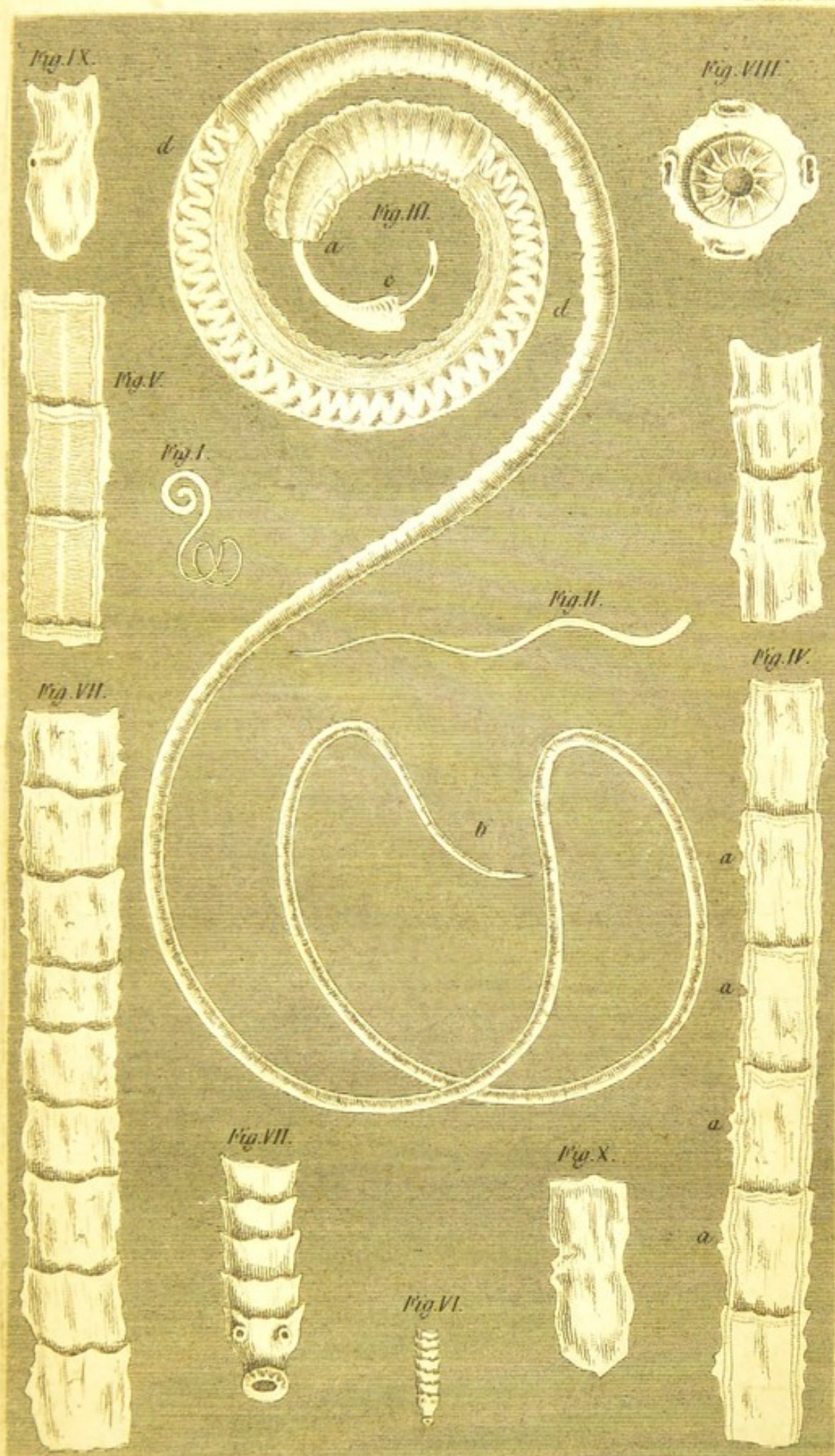
Fig. VII. The same magnified.

Fig. VIII. The mouth much magnified, with its oscula.

Fig. IX. and X. Detached joints or portions.







INTRODUCTION.

ALL creation teems with animated life. The earth, sea, sky, air, water, and even animals and vegetables, afford accommodation and subsistence to living creatures. The body of man in particular, in every period of its existence, whether living or dead, is the prey of animals.

This apparent profusion of animated existence, each individual of which enjoys the full portion of hap-

piness allotted to its nature, presents us with a most exalted idea of infinite benevolence. The same analogy, respecting the parasitical inhabitants of animated life, applies also to the vegetable kingdom. Trees carry their missletoes, their mosses, and their fungi.

Those who believe that all things were created for the exclusive use and advantage of man, will find some difficulty in demonstrating the final cause, or immediate utility, of parasitical animals. The parasites on trees, or weeds in fields, will also give some trouble to those who profess to believe, and prove, that

all these are directly beneficial to man.

We are disposed to view this extensive question in a very different light, and to consider *all* the difficulties of preserving health, the numerous diseases, the troublesome, and often formidable, annoyances of animals; the terrible effects of earthquakes, hurricanes, tempests, and lightning, as working together for the final good of mankind; but in a secondary and circuitous manner. If men inhabited paradises alone; or had been designed to live in the golden age, fabled by the poets, when the lion and the lamb

laid themselves down together; when every land brought forth every fruit; and when men knew no vicious propensities, nor any of the bad passions had existence; then ^{if} man would never have measured the courses of the stars, nor encountered the dangers of navigation. We should have had as many languages, and as many religions, as counties or districts: discoveries and improvements would never have been made, or never disseminated. In other words, man would have been as supine and ignorant as the beasts of the field. Difficulties call forth his energies, sharpen his invention, and

compel him to see a power uncontrollable by man in every thing that surrounds him.

Diseases, and the annoyances of animals, remind him of self-preservation, and the great importance of health, of foresight, and prevention; and these irresistibly enforce a strict attention to cleanliness, which, in the fullest sense of the word, may be considered as the PARENT OF HEALTH.

There is, as far as we know, no animal so long helpless as that descended from the human race. The infirmity which very commonly and naturally follows child-birth, in this variable and cold climate,

frequently disqualifies the *mother* from paying those attentions absolutely necessary to the welfare of the young offspring of the human species. The natural or acquired indolence of many hired nurses, joined to the feebleness of the mother, for some weeks after delivery, exposes the recently-born infant to a thousand neglects: but the most formidable, next to want of food, is want of cleanliness. No strength of constitution, no original health of the child, can long bear up against this.

I have laid the more stress on this point, in the Introduction, because

I am convinced that very few are sufficiently aware of its importance. I would wish to have the child dipt in a cold bath the moment the cord is secured ; then well washed, immediately, with soap and warm water, especially about the head ; well rubbed, and then dressed warmly, especially on the feet ; afterwards, the washing with soap and cold water will be preferable to warm ; but the rubbing should never be neglected for a day. The bowels should be kept in order by means of three or four grains of rhubarbateaspoonful of syrup of ginger, every other day. With these attentions pro-

perly directed, most of the diseases of young children may be prevented, except those which arise from contagion, such as the small pox, measles, hooping-cough, itch, &c.

I am now supposing that the mother, or some young healthy nurse, is able to supply the child with a sufficient quantity of good milk. If this should not be the case, or if the parents should have an insurmountable objection to the child's sucking any one except its mother, then the deficiency of the mother is best supplied by asses' milk, by weak beef-tea, mixed with baked

flour, and made in the manner to be explained hereafter.*

This is the true mode of preventing Diseases in general, and of Worms in particular. However, if through weakness of constitution in the child, or improper nursing, Worms are suspected to exist at any period under nine or ten years of age, these suspicions must rest upon the appearance of some of the following symptoms :

* See the Appendix.

TREATISE ON WORMS.

General signs of Worms.

THERE is no ambiguous symptom of disease which the existence of Worms in some constitutions may not assume. Some of the symptoms are so extraordinary, that superstitious people have often attributed them to witchcraft. Baglivi, a very learned Italian Physician, says, “ observe, that there is
“ no symptom so strange, irregular,
“ or distressing, which may not
“ depend on Worms ; they are

“ sometimes so horrid and extraordinary, that the vulgar impute them to the devil, or some of his witches.” The most common, however, and which always ought to excite suspicion, are, the belly being too hard, tense, and larger than natural ; a peculiarly disagreeable odour of the breath, especially in a morning before taking food ; the tongue furred, notwithstanding the increased flow of saliva into the mouth ; a particular heaviness, or languid blueish appearance about the eyes ; a swelling and paleness of the lips, especially the upper lip ; itching of the nose, and sometimes a particular whiteness of it ; pale, thin,

crude urine, and in some instances of the colour of whey, or quite white; the pulse sometimes hard, sometimes weak and quick, but always unequal; sour eructations; a sensation about the navel, which the patient, if old enough, endeavours to describe as a pinching or nipping pain; bowels very irregular, either obstinately costive, or very loose; appetite also irregular, sometimes loathing all manner of food, at other times uncommonly voracious. These are the most constant and unerring symptoms of Worms.

But, in some cases, the countenance will appear thin, emaciated, and pale; and at other times, the

face will be flushed, and like crimson. Mucous stools are very usual, depending upon the irritation of the worms in the intestines; griping pains; a short dry cough; great thirst; vomiting; startings during sleep, and grinding of the teeth; frequent pains in the sides; a listlessness and want of inclination to take exercise, on account of weakness; prolapsus ani, or falling of the fundament; and inflammation of the eyes.

In not a few instances, loss of speech occurs; and if the disease be neglected and suffered to advance, the mucous stools increase; cold

sweats supervene ; convulsions, epileptic fits, palpitation of the heart, frequent faintings, hiccup, hectic fever, apoplexy, and finally death itself.

It is to be observed, however, that *other* diseases may produce the greater part, if not all the foregoing symptoms, without the patient possessing a single worm of any sort whatever.

Hydrocephalus, or watery head, or dropsy of the brain, as it is commonly called, is attended by many symptoms similar to those occasioned by worms—as disturbed sleep, startings, grinding of the teeth

during sleep ; greediness of food ; flushing of the cheeks ; sickness ; picking of the nose ; and the urine often depositing a sediment of a light colour. There are, indeed, so many symptoms in *hydrocephalus*, resembling those arising from worms ; from diseased mesenteric glands ; from dentition, and other irritating causes, that it is difficult to fix upon any which shall particularly characterize this Protiform disease. The surest indications of a Watery-head, in children, are lassitude, slight pyrexia, pain of the head, a slow pulse, drowsiness, and the pupils of the eyes dilated, and

not readily contracting on being turned to the light.

I think the difference in the state of the pulse, when examined by an experienced practitioner, may, with other attendant symptoms, tend greatly to distinguish the difference between the Watery-head and Worms. In the dropsy of the brain, the pulse is remarkably *irregular*; sometimes as low as sixty-eight beats in a minute, and often as high as 120 or 150, which is almost too rapid to be counted, varying at different times of the same day. A squinting, also, a frowning brow, impatience of any posture but that of

lying down ; a frequent raising of the hand to the forehead ; great drowsiness, and an obstinate costiveness, assist greatly in discriminating the Watery-head from other complaints. Dr. Fothergill, than whom few have had more opportunities of seeing and comparing both diseases, says, that he had seen some cases which he thought were in the last stage of hydrocephalus, but were happily recovered in consequence of finding that they were only Worm cases too long neglected.

It does, however, very frequently happen, that in the last stage of that, and every other fatally-tend-

ing disease, some of the Worms, as if they had a presentiment of what was going to happen, shift their quarters and make their appearance; this removes all doubt respecting that *one* complaint.

The disease of the mesenteric glands, as previously noticed, and which occurs in the same constitution as the Watery-head and Worms, and depends on similar causes, leads directly to a wasting of the flesh, and paleness, technically called *tabes mesenterica*, or mesenteric fever, or mesenteric consumption.

The *cause* of this wasting, however, is very different from that of

Worms ; in the former, the channels through which the nourishment ought to pass into the body are *blocked up* ; whereas in the latter, the Worms devour the nourishment which ought to go to the support of the system.

The peculiar hardness of the belly, nearly resembling that of a board, may, however, very generally be depended on as distinguishing this complaint from those which proceed from Worms.

Since, then, the difficulty of pronouncing upon the nature of disorders supposed to arise from these animals is so great, before any

Worms have been *actually seen* ; and where, grounded upon some of the foregoing symptoms, there is good reason to suspect them, the following trial should immediately be had recourse to.

Let four or five grains of Calomel be given in treacle, jelly, or sugar, at bed-time ; and one of the following purgatives on the morrow morning, the dose being regulated by the age and other circumstances of the child, viz.

1. A scruple of rhubarb ;—(this is the best.)

2. Fifteen grains of jalap ;—(less nauseous.)

3. A dish of strong senna tea.

4. Ten or twelve grains of scammony.

If there are any number of Worms, this treatment will expel *some of them*; and at the same time direct us in our future conduct, by shewing with which kind of them the sufferer is infested.

Explanation of Symptoms.

THE weakness, ravenous appetite, paleness, costiveness, hardness of the belly, and flatulence, may fairly be accounted for by the deficiency of the chyle, or nutriment, which

should go to our support, which is devoured by the Worms as fast as it arrives at the place where they inhabit.

The offensive smell of the breath, the fetid and sour eructations, the discoloured appearance of the stools, and the diarrhœa, are not so readily accounted for ; some writers, however, think that the excrements of Worms are the cause of them.

Their motion, and incessant gnawing, and sucking the coats of the intestines, must produce an irritation which is sufficient to account for the vomiting, sickness, tenesmus, St. Vitus's dance, epilepsy, convul-

sions, and all the evils connected with nervous affections.

Such are the *general Symptoms*; let us next enquire into the general *Causes*, which favour the production and great increase of Worms.

General Causes.

THE great difficulty of accounting for the manner in which the Worms *first get into the body*, has induced several great men, with Hippocrates at their head, to believe, that children may be born with

them.* I have never witnessed a single fact to countenance any such opinion of the origin of these intestine enemies.

My opinion is, that children are *not* troubled with them as long as they are fed on the mother's milk ALONE. Mr. Chamberlaine, indeed, says, "I have certainly seen both
 "the round Worm, and Ascarides,"
 (my second species) "in children
 "in the month; and I most point-
 "edly maintain the opinion to be
 "erroneous, which asserts, that
 "children never have Worms while
 "they live on the breast." He

* See the Appendix.

does not say, however, that, to his certain knowledge, these children *had never tasted any food but the mother's milk, during that month.*

The opinion that the eggs of intestinal Worms are taken in with our vegetable food, or water, appears to deserve our serious attention, as far more probable.

‘It is not, however, of so much importance to ascertain the *origin* of intestinal Worms, as to examine what circumstances are most favourable to their continuance, in number, bulk, and strength.’

In my lectures, on the Practice of Medicine, I have always treated of

Worms immediately after *dyspepsia* or feeble digestion; and I am convinced that this is the principal cause to which they should be attributed. Other causes also concur, unclean bowels, deficient exercise, and improper food and clothing.

That debility of the organs of digestion greatly promotes the generation and rapid multiplication of Worms, appears from this; when we have strengthened those powers, the Worms diminish in number and strength, and often disappear altogether. We know that children under the age of ten, live almost entirely on vegetable food; that they are

very fond of fruit, even before it is ripe, and if they cannot get peaches, nectarines, melons, or pine apples, they substitute raw turnips, peas, currants, apples, crabs, goosberries, and sloes, ripe or unripe. Instead of proper exercise in the open air, they are shut up in small school-rooms, where very often they have but just room enough to sit.

This period of life, from one to nine or ten, is, for the reasons above-mentioned, the *Worm age* of childhood.

After this period, children begin to use more animal food, more

regular exercise, and accordingly
Worms become less common.

If any further proof could be wanted of the power of crude washy vegetables in producing and perpetuating the evils arising from Worms, we may find it in the sufferings of the Algerines from that kind of diet; from those of the Negroes in the West Indies, and many others, besides the children of the poor among ourselves. Another great cause of Worms is, *bad living*, as it is very properly called; that is,

living on unwholesome diet, which the children of the poor in the country, and in towns, sometimes do ; either from necessity or choice ; such as raw turnips, raw peas, apples, pears, sloes, &c. with *very little animal food*.

Not only this sort of bad living, where the fault is in the *kind* and *quality* of the food ; but an insufficient *quantity* of that which is, in other respects, wholesome and good, disposes rapidly to the production of these animals. Hence we see many persons, who before imprisonment had never been infested by these intestine enemies, become the

prey of them in a short time after they have been shut up in a prison, and reduced to a scanty allowance of bread and water, and six ounces of meat twice a week,

Of the different kinds of Worms.

“ SUCH is the nature and office of
“ the human stomach and intes-
“ tines, that insects and worms, or
“ their eggs, may not unfrequent-
“ ly be conveyed into that canal,
“ with those things that are daily
“ taken as food ; but such insects or
“ Worms do not live long, and
“ seldom, if ever, generate in a
“ situation so very different from
“ their natural one.”

“ Besides these, there are Worms,
“ which are never found in any
“ other situation than the human

“ stomach or intestines, and which
 “ there generate and propagate their
 “ species.”

These last are the worms to be
 treated of in this tract; and there are
 FIVE sorts or species of them ; viz.

1. The large round Worm some-
 what resembling the earth Worm.

2. The very small *short* Worms
 called ascarides.

3. The Tricuris, or *long* thread
 Worm.

4. The Tœnia, or Tape Worm,
 of which there are two species well
 known ; and perhaps a third.

*Of the first Species, or large round
Worm.*

THIS is the *large and long round
Worm*, and in the country, the first
seen in children, and the most likely
to attract attention any where.

The *descriptions* of all the species
are taken from Dr. Hooper's most
accurate and scientific arrangement
of the different kinds, accompanied
with beautiful plates, exhibiting the
true form of these animals, both of
their natural size, and also magnified :
—See the fifth vol. of the Transac-

tions of the Medical Society of London, page 230, &c.

This being an *ascaris*, and much resembling the common earth Worm at first sight, should be called the *Lumbricoid ascaris*, as it is named by Linnæus and Dr. Hooper. It is called, however, the *round* or *tapering* Worm by Hippocrates and the Greeks; and generally known by that name.

Description.

WHEN this Worm is full grown, it is from twelve to fifteen inches long, and about the size of a goose quill. The head is at the small end, and has three round balls, forming a triangle, in the middle of which is the mouth. The tail ends in a very sharp point, near which is the *anus*, or lower end of its intestines. The body constitutes nearly the whole of the animal, and it has a line very visible on each side, running from end to end. Near the middle, but rather nearer the head than the tail, is a

depressed band, about a quarter of an inch wide.

The earth worm, on the contrary, which many persons think is the same as this intestinal Worm, has an *elevated* belt near its middle, and differs from this in every part of its head, body, and tail.

They generally infest the small intestines ; and of these the upper part, nearest the stomach, more commonly than the lower parts. They often ascend up into the stomach, and have been seen to creep out at the mouth and nostrils. They seldom descend into the large intestines, unless in consequence of

medicines given with the design of dislodging them. They have been found, after death, in the gall ducts and gall bladder, and, therefore, bitters alone will not destroy them.

These Worms are generally very numerous; but from thirty to fifty is the most common number. Dr. Hooper knew a girl of eight years old, who voided upwards of two hundred in the course of a week. “Nevertheless instances frequently occur of their being solitary.”

When they are recently voided, they are of the colour of water tinged with blood, and appear nearly transparent; but this appearance is

soon lost, and they become of a light *opaque* yellow.

If they have been weakened, or sickened by medicines given for that purpose, they will die soon after they are voided. But if the patient has taken nothing of that kind, and a very brisk purge of powder of senna leaves be given, they may be obtained full of life and vigour, and if they are instantly put into milk and water, slightly sweetened, and of the warmth of the human body, they may be kept alive a long time, and appear very vivacious and active.

The motion of the common earth

worm is performed in a manner similar to that of the snail, that is, by shortening and extending the body alternately ; but the motion of the Lumbricoid ascaris, or common round Worm, is serpentine, and he progresses as the serpent does, by curling the hind part into circles, and the head is sent forward by the animal suddenly, and with considerable force, extending its circles almost into a strait line.

Respecting the *sex* of this worm, there still remains a great difference of opinion. It was very generally believed, that the same Worm performed the offices of both male and

female, and that it constituted a notable instance of *equivocal generation*. But the notion of such sort of generation existing in any instance, is now nearly given up; and Dr. Baillie, in his *Morbid Anatomy*, says, “in the *lumbricus teres*, the parts of generation are different in the male and female.”

Dr. Hooper, who was well aware of this unqualified opinion, says, “The Worm which I have described is considered as the *female*, and all the observations I have given are made from one of that sex. Nevertheless, I must observe, that I have examined a very con-

“siderable number of these animals,
“and have never seen any other
“appearances than those I have
“described.” We may infer, therefore, that the females are far more numerous than the males.

There can be no doubt that these Worms, like insects, are oviparous, and the eggs hatched by the warmth of the intestines. The eggs may be distinctly seen, both in the animals themselves, and in the mucus of the human intestines which surrounds them.

The anatomical structure of the Lumbricoid ascaris is given by Dr. Hooper with the greatest accuracy

and minuteness ; but it would be unintelligible to any one unacquainted with anatomical terms, and is by no means necessary in this part of the work, the design of which is only to *kill* Worms, not to dissect them. See the Appendix.

The SYMPTOMS attending the presence of these Worms, which do not apply to the other sorts, are, the pinching pains in the bowels, especially about the navel; arising, doubtless, from the Worms sucking and gnawing the inner coats of the intestines. It is said that they sometimes eat holes through them, and produce death. There is no doubt

that they devour much of what ought to go to the nourishment of the body, when they are numerous; and thereby produce the paleness and weakness. The itching about the fundament is never caused by this kind of Worms; nor is the sense of a heavy weight in the bowels, which seems to fall from side to side, when the patient turns in bed, produced by this species. But these are the only ones that creep out at the mouth and nostrils.

CURE

*Of the first Species, or large round
Worm.*

THE plan best adapted to this first species, is to sicken them, or render their habitation very uncomfortable; and then a purgative suitable to the age and strength of the patient will remove them, or some of them. All the remedies of this kind are, in medical works, called by the general name of *anthelmintics*.

I commence by giving an antimonial emetic, consisting of either of the three following, viz.

1. From three to seven grains of antimonial powder. Or,

2. A grain to a grain and half of emetic-tartar. Or,

3. Two tea-spoons full to six of antimonial wine.

This will rarely fail to clear the stomach, and upper part of the intestines of them, and very frequently it will expel many downwards.

The powders may be given in a little sugar, and the antimonial wine sweetened if necessary ; if the point of the finger be dipped in breast milk, or any other innocent fluid, and then put into the child's mouth, the powder and sugar will be sucked from it by the youngest child.

There is no cause for fear respect-

ing the largeness of the dose, because young children bear vomiting better than any other age.

If this dose should not produce the effect of an emetic, but only purge the patient, it will be proper to give two tea-spoons full of antimonial, with four or five of Ipecacuanha, wine, which will very seldom fail to vomit, and often purge also.

If either of these emetics fail to vomit, the dose may be very safely increased, especially of the last, till the desired effect is produced.

If no Worms are discharged by

these means ; then let one grain of the muriat of mercury, eight of the submuriat of the same, twelve of the prepared rust of iron, and about sixteen of white sugar, be well mixed and rubbed together in a marble or Wedgewood mortar.

Ten or twelve grains of this powder should be given at bed-time, for two nights successively, and on the third morning the bowels should be completely cleared, by a dose of equal parts of rhubarb and jalap. The youngest child may take five grains of each ; but for a child of from five to fifteen, which is the most common Worm age, the dose

should not be less than ten grains of each, fifteen grains of each may be taken with perfect safety.

I have never found this plan fail to dislodge a considerable number of the Worms of this first kind: but if the quantity of rhubarb and jalap which I recommend cannot be got down, I then advise a powder, composed of equal parts of resin of jalap, gamboge, scammony, and aloes, well mixed together and rubbed down quite fine. From two to five or six grains of this may be taken in treacle, which is far preferable to honey or currant jelly, for honey disagrees with many stomachs,

and jelly or jam is too thick. Though I do not hold this cathartic in the same estimation as that of rhubarb and jalap, yet it purges off the calomel and iron very well, and is at the same time of itself a powerful vermifuge.

A similar dose of the compound powder of scammony, prepared as ordered in the last edition of the Pharmacopœia of the London college of Physicians, published in 1809, and *kept in every shop*, will be found a very good substitute : so will their compound powder of senna ; but the dose is as bulky as that of the rhubarb and jalap.

When the patients are arrived at the age of reason, or are well dispo-

sed to be obedient, the following pills are recommended, from much experience, viz.

R Hydrarg : muriat : gr. iij.

Hydrag : submur : gr. xij.

Ferri sulphat : gr. viij.

Saponis q. s. ut fiant Pil : XII, ope Pulv : zinziberis, vel potius pulv : cornu usti cum opio. Two morning and evening.

This must be made up by some Chemist, who can be depended upon, as well as the following :

R. Solutionis Fowleri gtt. vj.

Tinct. Gentianæ ʒij.

Tinct. Quassiae ʒj.

Aquæ pimentæ ʒiss. M. ft. haustus.

This draught should be taken morning and evening for two days, and then purged off by one of the means above recommended, or by calomel administered in doses of from six to ten grains on the third morning.

This treatment has never deceived my expectations ; and if it has not expelled all, it has, even on the first use of it, always evacuated many of these intestine enemies.

If these remedies, faithfully prepared, and truly administered, fail to remove all this kind of Worms, of which alone I am speaking, at present, and the case be transmitted to

my publisher, I engage to lay it before the public, in order that they may judge of the reliance which ought to be placed upon medical experience.

Other medicines of great efficacy in this species of Worms, are, the *Stizolobium*, or cowhage, commonly called cowitch, long used by country practitioners; most probably in consequence of that excellent work published on the subject, several years ago, by Mr. Chamberlain, of this city.

The Indian pink, also, in decoction.

The cabbage-tree bark, in decoction.

Assafoetida, sagapenum, garlic, and camphor; bear's foot, or stinking hellebore, may be employed, in cases of adults, with great advantage, where better remedies are not at hand. But nothing is so easily taken, or more efficacious, than those I have above recommended.

Having said sufficient respecting the cure of the first kind of Worms, or the first species, it only remains to mention, that after the cure or extermination of any or of all the kinds, care is necessary to prevent their return. This is effected by the *Preventative Cure*, which is accomplished by keeping the bowels

regular, strengthening the powers of digestion, by tonic bitters, chalybeate waters, &c. and by proper diet and exercise.

It is, however, often observed, that symptoms resembling those which usually accompany Worms, have induced the giving of vermifuges, and of many Worms having been actually expelled ; and yet the pain of the stomach, and the other symptoms, have not been relieved till after the use of tonics ; such as the compound mixture of steel of the London College, tincture of muriated steel, steel wine, bark, valerian, &c. with good air, generous diet, and proper exercise.

Of the Second Species, or Ascarides,
commonly called the Maw, or
Thread-worm. (See plate II, fig.
1, 2, and 3.)

Description.

WHEN fully grown, they are about half an inch in length, and of the size or thickness of a thread.

The head of this animal is at the largest or bluntest end, and is formed like that of the first species, already described; that is, it consists of three vesicles, in the middle of which

is the mouth. The head and body form about one third part of the whole length, and from the end of the body the tail begins to taper down to a very fine point, so much resembling a ladies shoe-maker's awl, that the Germans give this Worm a name, taken from that instrument.

They infest every part of the alimentary canal, but principally the stomach and lower extremity of the bowels. Adults are nearly as much harassed by them as children, particularly when they are in the *rectum*, where they cause an intolerable itching and very fre-

quently creep out. Their motion is like that of the maggots of cheese. They are commonly very numerous, that is many thousands in one patient, but being so small their bulk produces little inconvenience, compared with the large Worms of the first species. (See plate I.)

These Worms are very prolific, and are viviparous, that is, produce their young alive. A parent Worm commonly produces more than a hundred at a birth.

For the particulars of their anatomy I must refer to the Appendix.

These are found far more frequently than all the other species

taken together. Perhaps very few persons pass through childhood without some of them.

Symptoms.

THE only symptoms by which they can be distinguished from the first species is the itching at the *anus*, or fundament.

While they continue in the stomach of children, they cause but little inconvenience ; it is only when they descend into the *rectum*, both in children and adults, that they cause much distress. The itching

produced by them is often so great as to prevent sleep, and is always very harassing. Sometimes they produce a sensible tumor about the *anus* ; cause tenesmus, or a constant desire of going to stool ; and the distress arising from them, in some instances, produces fainting.

They rarely infest very young children, as is remarked by Hippocrates. But the symptoms produced by them in this country are slight, when compared with what the Algerines suffer from them ; where they frequently occasion death. There they are larger, much stronger, and far more active, in

consequence of the people living upon crude and watery vegetables, with little or no animal food, and indulging extravagantly in green and unripe fruits ; which in every country greatly favours the generation of Worms.

In the West Indies among the negroes, whose diet consists chiefly of vegetables, complaints arising from Worms are much more frequent than among white people, who use a due admixture of animal food. Bad living, as I have mentioned before, as well as a want of cleanliness, favours the production of Worms ; and hence they are most frequently found among the poor.

Cure.

WHEN these ascarides inhabit the stomach only, or the upper part of the bowels, the same method of cure must be employed as recommended for the first sort; especially the antimonial emetics. But as these very small Worms bury themselves in the mucus, or slime of the intestines, they are more difficult to be dislodged than the others, and may therefore require a longer

course, and more frequent repetitions of the same medicines. Here the stizolobium, cowhage, or cowitch, is particularly efficacious and perfectly safe. It is prepared by Mr. Chamberlaine in the form of an electuary ; but he is convinced that good treacle, such as is to be had at any grocers, is the best vehicle for this, as well as for flowers of sulphur ; which is also a good vermifuge and preventative of Worms. But, if a child should be found who has an aversion to treacle, jam, or some jelly, may be employed, instead of the treacle.

The cowhage is not limited in its dose, like many other remedies,

where an *over dose* may be dangerous. From infancy to four years of age, a tea-spoonful; from thence to fourteen, a pap-spoonful; and afterwards a table-spoonful, morning and evening, of his electuary, is sufficient, but double the quantity may be taken without any danger.

When this has been continued for three days, a brisk purgative should be given on the fourth morning, as after other vermifuges, viz. powder of rhubarb, of jalap, of senna leaves, of brimstone, castor oil, &c.

But when they take up their habitation in the *rectum*, we can

attack them with greater advantage and much greater certainty of success.

The remedies that we dare apply to this part of the alimentary canal are far more powerful, and if more nauseous than those we apply to the stomach, that constitutes no objection here.

THE BEST CLYSTERS for this purpose are,

1. Twelve or fifteen grains of powdered aloes, dissolved in about three ounces of milk ; and three or four table - spoonsfuls will commonly be sufficient for the youngest child ever troubled with these

Worms, for they rarely infest infants. The quantity of the aloes may be increased, according to the age, as far as four or five scruples in each clyster. This preparation may very properly be called the *milk of aloes*.

I would not recommend aloetic clysters or purges to persons of an age advanced enough to have piles ; for I am convinced that the frequent use of aloetic pills is a very common cause of this distressing complaint. My favourite substitute for aloes, both as pills and clysters, is the compound extract of colocynth, as sold by respectable Chemists.

The dose of this is rather greater than that of aloes made into pills, and in clysters may be given to double or treble the quantity that we may venture to give aloes. The small quantity of aloes contained in this extract is corrected by the other ingredients.

2. If the foregoing should fail, which I believe will very seldom be the case, when properly administered, I next recommend, what can be had in all the shops, the milk of the gum assafoetida ; or of gum sagapenum.

3. Clysters of any of the *oils* ; but the best is an ounce of *castor oil*,

to which may be added the milk of either of the above-mentioned gums, in a quantity suitable to the age of the patient.

But it should be observed, and constantly kept in view, that we may always give very large doses of *any* medicine in clysters ; even of opium, with perfect safety ; with the single exception of the infusion of tobacco ; which, though a very powerful remedy, in this highly distressing disease, must be administered with a very cautious hand. I should not recommend more than a quarter of an ounce to be just boiled up, with a pint of

water, or bitter ale ; and from two to six table-spoons full, according to the age of the patient, to be given in a clyster.

4. Ice water, as a clyster, is very successful, merely by its coldness.

If these remedies prove ineffectual, which I believe will rarely be the case, some skilful Physician should be consulted, who will know how to administer solutions of calomel with arsenic, or with corrosive sublimate, in clysters, which never will fail to destroy these vexatious vermin.

When this second, or any other species of Worms, have been com-

pletely expelled or eradicated, we should guard against their return, by the *preventative cure*, recommended in the first species. But in this kind, frequent clysters of soap suds, or even of water, with a little powder of rhubarb in it, will prevent their return into the rectum.

The daily habit of washing this part of the bowels, so universal in France among the ladies, is gaining ground rapidly in England; and an apparatus, by means of which any lady may give herself a clyster, is contrived to be used on her bidet.

It sometimes happens, much

more frequently than is suspected, that when Worms in great numbers have been destroyed, in the stomach or bowels, they get dissolved or broken down, and pass off with the stools in such small pieces as not to be noticed.

Complete recoveries from the symptoms, which most unequivocally indicate the presence of these Worms, have taken place, after the exhibition of the Worm-destroying remedies above recommended, alternated with purgatives, and yet not a Worm, in its *proper form*, has been observed to be discharged.

*The third Species, called the long
Thread Worm.* (See plate III,
fig. 1, 2, and 3.

As this species has not been discovered or described more than fifty three years, we cannot expect to find any account of it in writers prior to that period. There is no doubt that it was confounded with the second species till Roederer distinguished them ; and, as the treatment or cure is the same for each, the discovery is not of great practical utility, but as a step towards the perfection of natural history.

Description.

THE body, when full grown, is the sixteenth of an inch in diameter. The length of the whole Worm is about two inches, two thirds of which constitute the *tail*; whence the French have called it the tailed Worm.

The *head* is at the large extremity, out of which the animal has the power of protruding and retracting a proboscis, (see the magnified figure, Plate III. Fig. 1, and also 2 and 3.)

This Worm tapers from the large

extremity, or the head down to the tail, which ends in a very fine point. They are generally numerous, although less so than the ascarides.

These intestine enemies of the human race have their abode in the lower part of the alimentary canal, and are not mentioned by any author as having been found after death in the stomach or duodenum, but in the cæcum, colon, or rectum.

The fourth Species, or kind, called
the Tape Worm.

HAVING said sufficient concerning the various sorts of *round* Worms, I proceed to the *flat* kind. These belong to a different order of animals altogether from those before mentioned ; and though I use the words *species* or kinds, I do not employ those terms in the sense that naturalists do ; I merely mean *sort* or kind of Worm.

Of the flat Worms, the first sort

I shall mention is the long-jointed
Worm ; called

The *Tape Worm*, in English.

The *Tænia* or *Solium*, in Latin.

The *Solitaire*, in French.

It has many other names, as

Vermis cucurbitinus.

Lumbricus latus.

Tænia cucurbitina.

Tænia secunda.

Tænia solium.

I find no mention of this sort of
Worms, now so common, in the
unquestionable writings of Hip-
pocrates ; but Celsus appears to

have been perfectly acquainted with them, as well as some of the other kinds.

Description.

THE distinguishing character of this species consists in the oscula, or mouths, being situated upon the *margin* of the joints.

The head of this worm is at the smallest end, and the joints increase in length as well as breadth as they approach the tail, which is a rounded joint. Each joint contains its proper viscera, and appears to be a

complete animal, though incapable of propagating its species.

For a minute account of the head, which is a very curious structure, I refer as before. (Plate III. Fig. 4, 5, and 6.)

In this species of *Tænia* the joints differ very much from each other in the same Worm. They are generally square or oblong; and the single detached joints resemble large cucumber seeds, from which circumstance these single joints have been often named *CUCURBITINI*, or Gourd Worm.

On the margin of each joint, near the middle of it, is a mouth, but no

one on the opposite side of the same joint. It often happens that a joint has more than one mouth; and not unfrequently three or four. In general the next joint has its mouth situated on the edge of the opposite side of the Worm. But this order is seldom preserved throughout the whole length of the Worm; for they are sometimes on the same side for several joints together, but they are never situated on the flattened surface: hence the mouths being on the *margin*, is the essential character of this species.

The joints are very easily separated from each other while the animal

is alive. This separation, which appears to be taking place almost incessantly, is effected either spontaneously, or by the incessant motion of the intestines, by which the useless part of our food is carried out of the body. Each joint thus separated from the mother Worm, has the power of retaining its living and sensitive principle for a considerable time. This circumstance has given rise to many disputes: several authors have denied their being portions of this species I am now describing, and have affirmed that they are distinct Worms. The separated joints appear to be inca-

pable of retaining their situation for any length of time, but being carried downwards, they are evacuated with every motion, or creep out. Such accidents are common to all who have the misfortune to nourish these horrible enemies.

Much experience has taught me, as well as many others, that when all the joints have been voided, (in consequence of the employment of proper medicines) except the head, and perhaps one or two joints next to it, that in a very short time new joints are generated, and the patient is as much troubled with them as before.

This Worm is not always *solitary*, as has been supposed, though one is quite sufficient to cause great distress. The length of this animal is often twenty feet, and Boërhaave says he has seen one thirty Flemish ells in length; and one that had 21,600 joints!

The head is very small, not exceeding the size of a grain of mustard seed, and the joints nearest the head are not more than one eighth of an inch in breadth, and one sixteenth of an inch in length: they continue of this small size for about the first twenty or thirty joints, then gradually increase in length

and breadth until they arrive at their full size.—See plate III.

The seat or usual situation of the Tape Worm, while it continues whole, is most commonly the small intestines ; but sometimes it is found in the stomach. In the small intestines it often occupies so large a space as to give a sensation of a large ball or weight falling from one side to the other, as the patient turns in bed.

*The fifth Species, called the broad
Tape Worm.*

Description.

THIS Worm consists of a head, a chain of articulations, and a tail formed of a round joint.

The *head* is like that of the last species ; but the *joints* are far more uniform. They are considerably broader than they are long, and their oscula, or mouths, as we call them, are not situated on the margin as in the foregoing species, but in the middle of the flattened surface,

and only on one side, throughout the whole extent of the Worm. (See plate II. fig. 3 and 4.)

The *separation* of the joints in this species is very rare, contrary to the foregoing. The *number* seldom exceeds three or four; and the *length* is seldom more than five yards.

It inhabits the small intestines only, and appears to feed alone on the pure chyle, which ought to go to the nourishment of the human body; and hence it is that this Tape Worm produces a greater degree of weakness, emaciation, and sallowness of complexion than any of the other species.

This kind of Worm is not common in this country, but very prevalent in Switzerland and Russia; and not uncommon in Germany, and other parts of the continent.

These are the only varieties of Tape Worm necessary to be mentioned in a practical and family treatise of this kind; and I believe there are no others that deserve much notice, even by a naturalist.

We come next to the most difficult part of our task.

The Cure of the Tape Worm.

“ *Hic labor hoc opus est.*” This is
 a work and a task indeed. Even
 Mr. Chamberlaine’s grand specific
 (cowitch) fails here. He says, “ For
 “ the Tape Worm, long experience
 “ has taught me that the cowhage
 “ does not prove so effectual as
 “ against the other Worms, unless
 “ the quantity of the setæ (hairs of
 “ the pods) be doubled. In very
 “ obstinate cases, I sometimes find
 “ it necessary to increase the quan-
 “ tity of setæ even to a threefold

“ proportion ; for they will not
 “ easily be made to let go their
 “ hold, which they are as tenacious
 “ of, as they are of life.”

The case of Kidd Wake, who got
 his Tape Worms by bad living in
 Gloucester jail, proves that even the
 “ threefold proportions” will not
 prove successful in “ very obstinate
 “ cases ;” and I consider all cases of
 Tape Worm as very obstinate.

Mr. Chamberlaine, speaking of this
 much-enduring man, says, “ he suf-
 “ fered so much from the Tænia,
 “ that when he came out of prison
 “ he was literally a mere skeleton.
 “ For a long time after his release,

“ the single joints, in lengths of from
 “ three to six and ten inches, which
 “ came away, as well when he took
 “ the cowhage as when he did not,
 “ were incredible. The cowhage,
 “ given in double and treble quan-
 “ tity, and aided by *limatur: stanni*,
 “ (tin filings) *liberally* exhibited, at
 “ times gave him considerable relief;
 “ but, he never, even to the day of
 “ his death, could be said to have
 “ *been completely cured.*”

If so experienced a practitioner,
 in so great a length of time, could
 not cure this poor man, by the libe-
 ral exhibition of his specific, aided
 by tin filings, and properly purged

off, we may conclude that this is no trifling disease.

Celsus, in his fourth book, which treats of the diseases of *particular parts* of the body, after mentioning several other diseases of the intestines, treats of WORMS.

He notices the circumstance of the first species creeping out at the mouth. His manner of mentioning the second, and the fourth and fifth species, intimates that he considered them as less common than the former. Of the two last species he says, they are *much worse* than the others. For the cure of them, he recommends half a gill of pep-

per, with a little scammony. Or, to take a large dose of garlic in the evening, and an emetic the next morning.

Valuable remedies no doubt, if we could persuade patients to take them. For ascarides in the *rectum* he recommends clysters of oil; meaning, I suppose, olive oil; as that kills many other insects.

Although Worms are often attended with a degree of slow nervous fever, and an evening exacerbation, yet I consider a real idiopathic fever, attended with a black tongue, as generally destructive of every kind of Worms.

A single instance has occurred of a Worm, resembling a joint of the Tape Worm, but much longer, being eight or nine inches in length, without any joints; but the tail resembled that of the Tape Worm, and the head that of an eel. The cure will be the same as for the common Tape Worm, if other instances should occur.

In commencing the arduous task of curing, or killing (for both are the same) the Tape Worms, I give a drachm of opiate confection at tea time, and at bed time a drachm of iron or steel filings, with six grains of calomel. This dose may

seem large, but it is to be remembered, that the Tape Worm infests *adults*, more commonly than young children. I have at this time two boys under my care, about eight years old, who have suffered much from the Tape Worms.

On the morrow, I give half a drachm of jalap, with five or ten grains of rhubarb: and I have never seen a case in which this plan has failed to bring away a very considerable quantity.

This same treatment should be repeated, at least twice a week, for a fortnight. If it should then appear that the head still remains behind,

or that there are more Worms than one, we should next try a more powerful remedy.

Give the opiate confection as before, and at bed time, two drachms of *powder* of tin, not levigated, with six or eight grains of calomel. Purge it off on the morrow morning as before. Let this be continued twice a week for a fortnight.

I consider the remedy last recommended, as so powerful, that very few cases, I believe, will occur, in which it will not prove successful.

The following has been recommended so long ago as the times

of Galen and Theophrastus, and lately revived by Madame Nouffer, in cases of Tape Worms. I have employed this medicine, and found its efficacy to be very great. Of the powder of the male fern root, one drachm every hour, for three or four times, and on the morrow morning give of hydrarg : submur : or calomel, ten or twelve grains.

Or, a strong dose of jalap and scammony may answer as well. A scruple of each will be fully sufficient for an adult.

The *purge* recommended by Dr. Simmons, is,

Equal parts of calomel and resin

of scammony ten grains of each ;
gamboge from five to eight grains ;
honey enough to make it into a
bolus. This is bold practice, and I
believe that few Worms of the
three first species will be able to
resist it.

The next remedy I shall mention
is that which Shmucker declares to
be infallible in the cure of Tape
Worms.

Take a drachm of the seeds of the
cevadilla, or caustic barley of Mexico,
(the seeds are not larger than linseed)
reduced to a fine powder, and mixed
with clarified honey, or treacle, every
morning fasting, for four mornings,

and on the fifth the purgative last mentioned.

The last remedy I shall particularize for the Tape Worm, is that for which *Mathews*, of Berlin, received an annual premium from the King of Prussia, viz.

Take of the filings of English tin, an ounce; the powder of the male fern root six drachms; the powder of Worm-seed half an ounce; the powder of jalap and sal polychrest, (potass. sulph.) of each one drachm.

Reduce them to an electuary by clarified honey or treacle.

The dose is a tea-spoonful every

two hours, for two or three days, till the Worm is felt moving; the patient is then to take a tea-spoonful of the following electuary, every two hours, till the Worm passes off, viz.

Take of jalap and sal polychrest
of each a drachm,

Scammony a scruple,

Gamboge ten grains,

Honey or treacle sufficient.

Great care must be taken to have the fern-root good, which in powder is of a reddish colour.

Spirits of turpentine are a powerful remedy against this Worm, in a

dose of two drachms, but it cannot be continued on account of the effect on the kidneys.

While a patient is taking any of these powerful vermifuges, he should drink freely of broths or beef-tea.

these cities, and that it cannot
 be continued on account of the
 effect on the climate.
 If the patient is taking any of
 these powerful remedies, he should
 take food of fruits or vegetables.

EXTERNAL THERAPY

OF

EXTERNAL INSECTS.

STONY WORM

EXTERNAL INSECTS

and which were propagated by
their clearest movements in these
towers and animals which they
make the entire of the
The first of the worms is very
to be found in the black sand-
banks of the coast of Africa; and the
regions impregnated from these sands

THE
GUINEA WORM.

HAVING mentioned all the Worms which infest the stomach and bowels, as natives of those parts, and which never propagate any where else, I now come to those parasitical animals which incommode the external skin.

The first is a Worm which is very troublesome to the black inhabitants of the coast of Africa ; and the negroes imported from thence into

the West Indies, have carried the Worms with them. They are the Gordii, or Guinea Worms, called also *Dracunculi*, *capillares vermiculi*, *Vena Medinensis*, &c.

They have been mentioned by medical writers upwards of a thousand years ago, and regularly by all the Arabian physicians, but some of the earliest mistook it for a diseased vein, and being very common at Medina, they called it *Vena Medinensis*. It was long thought to be the same as the Worm that lives in the skin of cattle, but *Ætius* and *Albucis* plainly distinguish them.

It lives under the skin of the legs, thighs, or arms, and while there, it causes but little pain ; but when it arrives at its full size, the part near the head of the animal suppurates, and the head soon appears through the skin.

It is with the commencement of the suppuration that the *disease* begins.

Description.

THE Guinea Worm is very long ; often as much as two or sometimes three yards ; and one is mentioned in the Edinburgh Medical Essays, that was three yards and a half in length. The production of these Worms is attributed to the great use necessarily made of stagnant rain-water in hot climates. They are observed to prevail most when the weather is hottest. The form and colour of them resemble round white bobbin.

Cure.

IN all other cases, killing and curing, are the same thing : but here we must be particularly careful *not to kill* the animal, by breaking it, or separating the head from the body.

As soon as the suppuration commences, we may hasten it by warmth or poulticing, as any other abscess or boil. When it breaks, for we must not venture to open it with a lancet, the head appears, and soon protrudes above the skin ; and

doubtless the whole Worm would creep out of its own accord, if we could guard the part already protruded from being injured.

The white people on the Guinea coast of Africa, very often, and in the West Indies sometimes, are tormented by these creatures. The manner of dressing the feet and legs, used by the whites, is a considerable guard against them ; but they, too, are often obliged to wash their feet and legs, &c. with stagnant rain water. There is no doubt that the animals endeavour to get out of their prison at a certain age, arising from the instinctive desire

of propagating their species. The intestinal Worms have a sufficient opportunity of doing this where they are ; but this being solitary, and having no proper place to deposit her eggs, is obliged to go in search of one. The common manner of getting them out, is by guarding the head with circles of sticking plaster ; tying a thread round the neck of the Worm, not too tight, and securing it on a roll of linen, spread with sticking, or adhesive plaster ; and as the Worm comes out, tighten the thread on the roll. In this manner the Worm may be got out much sooner than

if left to itself, and yet this requires many days. Great care must be taken not to break or divide the creature till the whole is got out; for if such an accident should happen, the part of the Worm left in the skin produces intolerable pain, tedious and distressing ulcers, as if that portion putrified and became poisonous.

There is no doubt, if this kind of Worm appeared in England, that we should soon find a successful and expeditious method of treatment.

There is yet another torment under the skin in the West Indies,

called the *Chigger*. This very small insect is scarcely visible, and gets commonly under the skin of the great toes, where it forms a nest, or round ball, like that of a spider, but very small. The sensation caused by the animal during this time is commonly very pleasant. To prevent the eggs being hatched there, the negroes are employed to cut out the nest with a needle, or sharp-pointed knife, by working all round it, and taking great care not to break it; for if it be broken, the eggs or young ones spread over the part, and you will have an hundred enemies instead of one. This is the only cure.

LICE.

THE next kind of parasitical animals which infest the surface of the human body, are the different sorts of Lice. The *first* sort are those found in the heads of children before puberty. Their eggs are fastened to the hairs, where they are hatched in winter, as well as summer. They appear to breed faster than any other animals in the creation, and often enlarge their bounds, from the head down to the

body, and lay their eggs in the plaits of the shirt about the neck and shoulders.

While they stay in the head, they are of the common colour of hair, but when they have been bred on the body, they are of a whitish colour. This first sort of Lice is by far the most common; few weakly children who are not kept *very clean*, escape them while young. They rarely trouble the *heads* of adults, but very frequently their bodies, if they are inattentive to cleanliness. In advanced age they lay their eggs in the wrinkles of the skin, and in a few rare cases

breed so fast, as to cover the shirt in an hour after it is put on. This loathsome disease is technically called Phthiriasis, or the Lousy Evil, and always depends upon some constitutional disease, which produces great paleness and bodily weakness.

The *second* kind of Lice are much smaller, very flat, and from their resemblance to a crab, are called Crab Lice, or Morpiones. They infest every part of the body covered with hair, except the hair of the head. Even the eyebrows and eyelids are not exempt from them. They are flat, and stick close to the skin by means of their feet, while they bite

with their mouths. The inconvenience arising from these depends on their bite alone ; from the first sort it is rather their feet in moving about, than their teeth in biting, that plagues the sufferer. The comb may certainly remove, and with perseverance, cure the first sort, as soon as all the eggs are hatched. In this second sort the comb is of but little use.

A *third* kind is mentioned by authors, but I have never seen them ; and much suspect that they are the same as the *chiggers*.

Writers on the subject of Lice, who are neither few nor of small

note, say, “ they are a sort which
 “ breed under the cuticle, or scarf
 “ skin, and are found in the *feet*
 “ and *hands*; they are of a round
 “ form, and so *minute* as often to
 “ escape the sight;” “ by creeping
 “ under the skin they cause an
 “ intolerable itching; and when the
 “ skin bursts where they lodge,
 “ clusters of them are found in the
 “ nest.”

These authors call them, “ acari,
 “ cyrones, and pedecelli.”

General Cure.

1. LICE of every sort may be killed or cured by mercurial ointment, whether blue or white.

2. A solution of corrosive sublimate in rose water, or spirits of wine, about a drachm, or a drachm and half, to a pint, will be strong enough. Care must be taken not to touch the eyes, lips, or any part where the skin is broken.

3. Take of *staves-acre*, (staphisagria) and of *cocculus indicus*, or *indus* (Indian berry), each half an

ounce. Pound them, and boil in a pint of water for a few minutes, or let them be steeped for a day or two in the same quantity of proof spirit. Wash the infected parts with either, and it will kill all that are hatched, by one washing. Half an ounce of potash may be added to either.

The second remedy is the neatest and soonest prepared. Or, lastly,

4. Take of the powder of the Indian berry an ounce ; pour on it of boiling water a pint ; let them stand an hour or two, and then wash with the tea.

Particular Cures.

For the *first* sort, besides the foregoing, we may merely sprinkle a little white precipitate amongst the hairs, at bed time, and secure the night-cap. This will kill them as fast as they are hatched, and it may be bought ready for use, without any trouble. The powder of staves acre, or of the cocculus indicus, may be employed in the same manner, and with equal success.

The *second* sort are best combated by the second remedy ; but the

third is sufficiently efficacious, and many persons have a great objection to the use of mercurial preparations.

For the *third* sort, let the parts affected be well rubbed with strong mercurial ointment, morning and evening, for two or three days.

THE ITCH.

AND last, though not least in torment, is that very small insect of the beetle kind, which is the cause of the Itch. This animal appears to have the same power and facility of burying itself in the skin, as large beetles have of burying themselves in the ground. When one, or a few, have acquired possession of the soft skin between the fingers, or in the hams, or inside of the wrists and elbows, where they commonly make their first appearance,

they soon get distributed to other parts by the fingers engaged in scratching, but never to the head. There is no doubt that the disease is first received by touching an infected person, or wiping with the same towel, or lying on the same bed.

The *symptoms* all consist in the itching and soreness of the pustules.

At first there appear small pimples with watery heads, which itch very much, on account of the motion of the little beetle, or tortoise, (which it very much resembles) and this almost irresistibly compels the *patient* to scratch the head of

the pimple off, and thereby distribute the animals round about the part affected, when the person is warm by the fire; or to distant parts, if the sufferer be undressed, and warm in bed.

These pimples often increase, and become filled with *pus* or matter, and resemble the pustules of the small-pox; and if neglected, the hands become very sore and almost useless.

Celsus says, that some of the pustules of the Itch have very little moisture in them; but I apprehend he must mean the scabs which arise,

when the white-topped pustules are broken.

Cure.

THERE are several remedies, which accident most probably discovered, but which experience has abundantly confirmed.

1. At the head of these, for safety, efficacy, and expedition, stands sulphur. It is made into an ointment with hog's lard, and well rubbed into the parts affected, before the fire at night; and washed off with soft soap in the morning; and

clean linen, &c. put on ; for the same dress would renew the infection. If the ointment be made of roll sulphur pounded, instead of the flowers, one rubbing will be sufficient. It will be proper for the person to take a purge or two of the well-known children's physic, brimstone and treacle, during the cure. If any objection can be found to so simple and safe a remedy, it is on account of its smell ; but as this continues for one night only it may be easily borne. Some persons hide the smell with perfumes, such as oil of rosemary, of lavender, of thyme, of bay-berries, or essence of

lemons, &c. Some authors add a small quantity of the powder of white hellebore root to the sulphur.

Sir John Pringle, who doubtless had much experience in this disease in the army, gives the following form for the ointment, viz.

Take of flowers of sulphur, one ounce.

Of the powder of white hellebore root, a quarter of an ounce.

Of crude sal ammoniac a drachm, and lard, two ounces, pound them well together.

He advises this to be divided into four parts, one of which is to be rubbed on one leg the first night, on

the other the next, then on the arms, one after the other. His reason for dividing the body into four quarters, is, that he might not stop up too many pores at the same time. We have no fears on that head, and recommend the whole body to be rubbed at the same time.

2. Those who have an insurmountable objection to the smell of sulphur for a night, may employ the sulphuric acid alone, properly diluted. The diluted sulphuric acid of the shops will answer very well, but care must be taken that it does not touch the linen till after it is dried on, or into the skin, or it may destroy the shirt.

3. A solution of crude sal ammoniac used as a wash for a few nights. Half an ounce to a pint.

4. An ointment made of the powder of the root of white hellebore and lard.

5. And last, though not least in efficacy, is a drachm of corrosive sublimate, now called muriated mercury.

Two drachms of roach alum.

Half an ounce of sal prunelle.

Lime water fresh made, and hot, half a pint; pour it upon the powdered materials in a corked bottle, and shake them well together. A few washings with this will cure any common itch.

The *mercurial girdle* also is a very effectual remedy; and for labouring people very convenient. When it is secured round the waist it requires no farther attention.

It is best made by spreading an ounce of strong blue mercurial ointment on a broad piece of list and covering the whole with thin linen. Put the side on which the ointment is spread next to the body, and secure it round the waist not over tightly. These are the external remedies.

As some very serious diseases are said to be brought on by suddenly repelling the itch, by the use of

greasy ointments ; by taking cold during the course of rubbing, &c. it is recommended to take purges of flowers of sulphur for two or three days, both before the outward applications are used, and likewise during their use, to employ a generous diet ; and avoid wet and cold.

It is no part of my plan to enter into diseases of the skin not caused by animals ; otherwise I should mention a disease which often attacks elderly people, called the *dry itch*, as having no watery pimples or pustules, but a scurfy, or scaly eruption. This is treated by the decoction of dulcamara, or bitter-

sweet, in which pot-ash has been dissolved, two ounces to a pint, as a lotion morning and evening ; by warm baths and sudorifics. Baths of Harrow-gate water, either natural or artificial ; and the drinking of the same, &c.

The *venereal* itch requires a course of mercury. There is an itching over most parts of the body, very common to elderly persons, and it appears to arise from a want of moisture in the skin ; or of that perspiration which the exercises of youth naturally produce. Though this is unattended by any eruption, or discolouration of the skin, the

treatment should be the same as for the dry itch.

The itching eruptions, so common in spring and autumn, may be prevented by proper purgatives of the cooling saline kind.

APPENDIX,

*Or Second Part of the Treatise
on Worms, &c.*

THERE are several things connected with the subjects treated of in the first, or practical and popular part of the book, which could not with propriety have been introduced there ; but, that Medical Practitioners may find in this little volume, whatever is either curious or useful on those points, I have reserved them for this Appendix.

If a child, in a few days, or a week or two after its birth, should have the misfortune to be deprived of its mother's milk, and no young wet-nurse with milk about the same age as the child, can, or will, be engaged ; it must be brought up by hand, as it is called.

The manner of doing this admits of almost infinite variety. I have no doubt that a child may be very healthily brought up, on potatoes mixed with cows' milk ; and with the addition of a little mutton, veal, or beef broth occasionally. Between this and the plan I am about to recommend, there are many shades

of difference; as by employing bread, grits, &c. instead of potatoes and larger proportions of the animal juices. I consider the following as the best. Let asses' milk be made as warm and sweet as the mother's milk, and let the child suck it through the perforated silver tube properly covered. If the asses' milk cannot be procured, cows' milk, diluted with water, may be substituted. When the child is old enough to be fed with a spoon or pap-boat: the vegetable food that I prefer, is fine wheaten flour, baked till it is turned brown; or, what is nearly the same thing, the flour may be tied in a

cloth, or pudding pan, and boiled as long as a pudding.

This preparation of the flour takes off the starchy tenacity, and renders it far more digestible than in its natural state. A proper quantity of this should be mixed with the milk, and sweetened with white sugar, or rather white sugar-candy.

But milk, water, and flour, or salep, will be insufficient without some of the *animal* juices extracted by boiling or roasting. That which appears to me to be by far the best, is beef tea, made from the lean part of the neck, or shoulder-blade. The manner of making it is by no

means a matter of indifference. The beef should be cut in a thick square lump, not as for making gravy, and put into a covered saucepan in cold water; a pint to a pound of beef. This should be heated slowly, and boiled till the gravy will run on the beef being scored: then the meat with the gravy is to be returned into the pan, and boiled for a quarter of an hour.

A quantity of this should be mixed with the child's food according to the age.

A little allspice may be boiled in the beef-tea, if the child be troubled with wind; and if with acidity or

gripping stools, a few grains of the compound powder of chalk, either with, or without the opium, should be given in the food. If costiveness should occur, which cannot escape the notice of the parent or nurse, a tea-spoonful of olive oil, or a little of the pulp of roasted apple, will generally be sufficient.

These attentions in feeding, cold-bathing, rubbing, and warm clothing, with good air; will prevent both Worms, scrofula and rickets; all of which arise from a neglect of them.

If the mother be well able and willing to suckle the child, a little

of the food above recommended will be very serviceable, and will be a good preparation for the weaning; which should take place in the seventh, or beginning of the eighth month, for the sake both of the parent and child.

When beef-tea is made for an adult, either during fever or when convalescent, it may be flavoured by pimento, mace, cloves, or any aromatic herbs, which are grateful to the palate of the patient, such as rosemary, thyme, savory, sage, tarragon, leeks, &c. and made stronger. A piece of upper crust of bread, toasted slowly, should be

added, when the scored beef is returned into the saucepan, and the whole may be boiled half an hour, instead of a quarter.

As the following part of this Appendix is designed for the perusal of medical practitioners, rather than mothers and nurses, I shall not think it necessary to abstain from technical terms, or Latin expressions; all which I solicitously avoided in the first or purely practical part.

Anatomical observations on intestinal Worms ; principally taken from the memoir so often referred to before.

First Species. The Long Round Worm.

The CUTICLE or scarf skin.

THE external covering or membrane which defends the true skin, and may be considered as the *cuticle* of the Worm, is very strong, elastic, thin, smooth, and transparent ; and easily separates from the parts beneath, if the Worm be macerated in water for a few days after its death.

The cuticle being removed, the CUTIS, or true skin appears, which is considerably thicker than the former, and retains the marks of the muscles which it covers. It is also very strong, elastic, and transparent.

MUSCLES. When the cutis is removed, the muscles observable through the skin, present themselves. They do not entirely surround the body of the Worm, as from their appearance one would be induced to believe; but are, in fact, two distinct orders acting in opposition to each other; for the two longitudinal lines, which extend from one extremity of the animal to

the other, are each of them composed of two distinct tendons, separable from each other. These tendons serve for the attachment of the semilunar muscles, which cover the Worm from the head to the tail.

Upon removing the semilunar muscles from the head to the depressed band, a number of minute *vesicles* are to be seen (by the help of a magnifier,) filled with a mucose (nearly mucous) fluid, which issues out upon puncturing them. This cellular, or parenchymatous apparatus, closely embraces the intestinal tube, from the head to the depressed band; but from thence to the tail there is merely a fibrous con-

necting substance, similar to what is called cellular membrane.

When the muscles are removed from the depressed band to the tail of the Worm, an extremely delicate membrane presents itself, analogous to the *peritoneum*, for it embraces the abdominal viscera, and lines the cavity of the abdomen.

The cavity of the abdomen extends from the depressed band near the middle of the Worm to the tail ; it is mostly distended with a transparent fluid, and contains the intestinal tube, and an apparatus supposed to be subservient to generation ; and these are all that constitute the abdominal viscera.

The intestinal canal begins at the obtuse extremity of the head, from the external triangular mouth situated between the three globose papillæ, and is continued for a small space downwards (nearly half an inch) in a parallel direction. To this part Dr. Baillie, in his "Morbid Anatomy," has given the name of œsophagus, or passage from the mouth to the stomach. It then becomes larger and transparent, continues increasing in size as it advances, until it arrives at the beginning of the abdomen, in which course it is closely embraced by a parenchymatous substance, as I have

before noticed. Having now attained the size of a crow-quill, it passes in a strait direction (and gradually enlarges as it advances,) through the whole length of the Worm, to within the eighth part of an inch, where it becomes suddenly narrower, and terminates in the anus.

This canal is generally filled with a greenish-coloured fluid of the consistence of mucus, not very unlike to the *meconium* of infants. If a portion of this tube be macerated for a few days in water, it exhibits distinct tunics, the external of which is a production of the perito-

neum ; it is externally covered with filaments, which connect it to the abdominal parietics. May not these (the indefatigable author suggests) be vessels of nutrition ?

The second viscus, or apparatus, is considered by some as peculiar only to the *female* worm ;* but all agree, that it is for the purpose of generation. It begins near the middle of the Worm, where the

* This passage is a translation of a short part of Schroeter's Inaugural Dissertation on Intestinal Worms : Who adds — “ In the “ *male* Worms (which Dr. Hooper, who is “ my great oracle on this subject, says, he “ never could see distinctly,) begins, near the “ tail of the lumbricus, to form a conical canal, “ some lines in length, called the *penis*.”

cavity of the abdomen commences, by a slender tube, which is continued from the punctiform aperture, situated in the depressed band, between the two longitudinal lines. This tube, which is termed the *vagina*, soon becomes much larger, when it becomes the uterus, and divaricates into two large crura, which, for the space of four or five inches, are continued of an uniform diameter: they then, on a sudden, become much diminished in size, and appear like opaque threads, embracing, in every direction, the intestinal tube. These are by Werner considered as the Fallopian tubes.

This convoluted apparatus is composed of very fine transparent membranes. It is never found empty, but is always distended with an opaque fluid, in which are a number of globular bodies, or ovula, containing young Worms.

Then follows a refutation of the opinion, that this Worm is viviparous; and that it is the *same* as the earth Worm; but I have said sufficient on that subject in the former part.

*Anatomical Observations on the
Second Species.*

THE integuments, or external coverings, of this species, are similar to those of the Lumbricoid *Ascaris*, and consist of cuticle, cutis, and, as far as I can discover, only one set of annular muscles.

I have never been able to detect any longitudinal lines upon its external surface.

The cavity in which the viscera are situated, begins at a very small distance from the head, and termi-

nates where the tail commences ; at which place there is a small opening, the extremity of the intestinal canal.

The only viscera in the *male* Worm, are, the *œsophagus*, *stomach*, and *intestine*. The *œsophagus* begins at the mouth, gradually enlarges for a small space, and terminates in the *stomach*.

This is a roundish bag, situated at the extremity of the *œsophagus*, so that both together they resemble an Apothecary's glass pestle, which constitutes one distinguishing character of this species. The stomach terminates in the *intestinal canal*, which is continued through

the Worm, more or less contracted or dilated, until it terminates in the *anus*.

The contents of the stomach and intestinal tube are always of the same colour, a dark brown.

The *female* Worm has (besides the viscera above described) an apparatus subservient to generation. It begins by a slender tube leading from the small punctiform opening, or *pudenda*, situated near the middle of the body. It soon becomes much larger, embraces the intestinal tube in every direction, and fills up the cavity of the Worm.

This gyrated *uterus* is not bifur-

cated as in the *Ascaris Lumbricoides*, nor has it those filiform appendages. Its end or fundus is as large as any other part. When viewed with a microscope, it appears like a bladder distended with Worms, for its young are seen distinctly moving about from one end to the other.

My *third* kind or *species*, as I call it, is a distinct *genus* of *Round Worms*.

Anatomical Observations.

THIS curious and singularly formed animal is supplied, like the preceding, with annular muscles, cutis, and cuticle.

The *proboscis*, which is undoubtedly the head of the Worm, appears to be formed of a transparent substance, and contains a

canal which is continued through the pulpy or funnel-like portion to the stomach and intestine. These are formed by a long canal, which proceeds in a direct line from the head to the very extremity of the Worm. It is largest at its beginning, and afterwards of the same size throughout the *body* of the animal; and when arrived at the place where the tail commences, it suddenly becomes considerably less in diameter, and terminates in the *anus*.

The remaining viscus, or OVARIIUM, is a convoluted canal similar to that of the female vermicular *Ascaris* (second species), but is sel-

dom found embracing the intestinal tube. The contents of this canal, ovula (eggs) and a limpid fluid.

I (says the ingenious author) have never seen any of the young Worms; although, according to Blumenbach, they are, in general, in considerable numbers.

The *flat* Worms are of a different ORDER; and the first genus and species of these (my *fourth* kind) have almost as many names as joints. Tænia, Solium, Latus, and Cucurbitinus, are the most common.

The common Tape Worm.

I HAVE never (says Dr. Hooper) been able to detect more than one membrane in the Tænia, which is very porous and elastic, and which I am induced to believe, from some experiments, is endowed with

nervous power. The Tape Worms, then, have no cuticle.

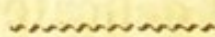
The head is composed, like the other parts of the Worm, of cutis and muscular fibres. The fibres, however, are not in any regular order, but appear to run in every direction, and are united together by a connecting cellular membrane.

The head contains also within it the beginning of the alimentary canal, which originates from the mouth by a simple tube or œsophagus, that bifurcates near the basis of the neck. This bifurcated alimentary tube proceeds from the head near each margin of the Worm

to the other extremity. “Through this canal the animal conveys the chyle to *every part, for its growth and increase.*” Notwithstanding my almost implicit reliance upon every thing advanced by Dr. Hooper, I cannot help being struck by Mr. Chamberlain’s observation.

“When we consider (says he)
 “the extreme minuteness of the
 “head of this animal, and the
 “minute and delicate structure of
 “the joints more immediately connected with the head, I never
 “can reconcile it to my mind that
 “so small an organ can take in a
 “sufficient quantity of aliment for

“ the sustenance of a body of so
 “ much greater proportion ; or,
 “ more properly speaking, a CHAIN
 “ of bodies, sometimes to the
 “ amount of several ells in length ;*
 “ and when, added to this, we take
 “ into the account the very great
 “ difficulty there is in disengaging
 “ the Tape Worm from its hold,
 “ and the obstinacy with which it
 “ baffles the action of even the



* Fyshe Palmer, in his Inaugural Dissertation on Intestinal Worms, says, “ There
 “ necessarily must be occasion for that great
 “ number of mouths, to furnish nourishment
 “ for so large a body, and to supply its rapid
 “ growth.”

“ most powerful medicines, is it
 “ not more probable, that these
 “ *oscula* not only answer the pur-
 “ pose of *mouthis*, through which
 “ the Worm receives its aliment,
 “ but also of *suckers*, or *tenacula*,
 “ by which it is enabled to maintain
 “ its hold of the villous coat of the
 “ intestines, throughout its whole
 “ length ?”

In these opinions Mr. Chamber-
 lain is supported by Tyson, in the
 Philosophical Transactions, and
 Rosenstein on the Diseases of Chil-
 dren.

When the cutis is removed, the
 muscles of the Worm may be dis-

tinctly seen. They are of a white colour, very much resemble the coagulable lymph, and are disposed in two orders, evident to the naked eye.

The longitudinal or external muscles, which are of a strong firm texture, running parallel to each other in the direction of the Worm, being firmly attached to a kind of ligamentous band, and placed along the articulatory receiving margin of each joint.

The transverse muscles, which are situated under the longitudinal, and across the joint transversely from one extremity to the other. I

have never detected any point of adhesion at the margins, and believe them to be annular.

When the longitudinal muscles contract, the *length* of the joint is diminished and drawn forward. The transverse muscles act by diminishing the *breadth* of the joint, and sometimes render it almost round.

Each articulation, or joint, is furnished internally with two distinct kinds of vessels, the alimentary tube and the *ovaria*. The rest of the joint is composed of a connecting cellular substance.

Le Clerc was the first who discovered the alimentary canal, but

he had not the most distant idea of its use. This longitudinal tube is also supplied with transverse canals. One is always sent across each joint along the articulatory receiving margin to the canal on the opposite side, with which it has a communication, so that the contents of one tube are, with great facility, communicated across to the other. As these canals are not to be detected, except by injecting the Worm, it may not be unacceptable to my readers to relate the method I usually pursue. I prepare the injection in the following manner: Take of fine parchment shavings

one handful, and boil in three pints of soft water to a pint and half; and then strain it through very fine gauze for use. Of this size I colour a sufficient quantity with finely levigated Chinese vermilion, carmine, ultra-marine, or any suitable conspicuous colour, to give it the desired conspicuous tint. The syringe I usually employ is an oyster injecting syringe with a quicksilver tube; which I soak, and a portion of the Worm, for some time, in warm water; then make a longitudinal incision with a lancet near the margin of the joint, and introduce the point of the syringe filled with

injection, taking care that the head of it be turned towards the head of the Worm, and then make a gentle pressure, when the injection will soon be observed running along the sides of the Worm, and several yards may be injected by one push. When the injecting is finished, the preparation should be carefully dried and put into oil of turpentine, when the longitudinal and transverse canals will appear very distinctly.

Each individual joint has a vascular structure situated between the longitudinal canals, occupying the middle of the Worm. It is dis-

posed in an arborescent form, and is termed the *arborescent ovaria*, from its resemblance to a tree, being composed of a middle canal or trunk, and lateral branches. There is a communication between this arrangement of vessels and the osculum on the margin, by means of an intermediate canal, which, in some joints, is filled with a brown matter.

The ovaria are generally filled with an opaque fluid, very like chyle, which is said to contain *ovula*.

In some joints, and generally those near the tail (for these are commonly more transparent than

the rest,) this circumstance is evident to the naked eye, especially if the joint be laid on black or deep blue paper.

If some of this opaque chyle-like fluid be taken out of these canals, and exposed to view under a powerful compound microscope, it is said to exhibit ovula of different sizes, from the largest of which, very slender *tæniæ* have been seen to escape upon rupturing its ovum, and they are in a contorted, spiral form, and having conspicuous traces of articulations, (as Goeze asserts,) with one extremity acuminate, the other obtusely broad.

Of the Connexion of the Joints.

THE joint next to the head is received into the basis of the head, and it, in like manner, receives the beginning of the next joint, which order is preserved throughout the whole extent of the Worm. The receiving articulatory margin may always be known from the other, by its being largest, and by its being fringed, whereas the other is plain, and somewhat rounded.

Of the Separation of the Joints.

THE joints of the *tænia osculis marginalibus*, are very easily separated from each other whilst the animal is alive. This separation is effected either by the peristaltic motion of the intestines, or, perhaps, spontaneously. Each joint, thus detached from the mother Worm, has the power of retaining for a considerable time, its living principle, and is called *vermis cucurbitinus*, or Gourd Worm. The separa-

ted joints do not appear capable of retaining their situation for any length of time, but are soon forced down the intestinal tube, and at length creep out or are expelled. I knew a man who had been for some time troubled with this species of tænia; whenever he took a purgative medicine, he voided upwards of forty detached joints with his fæces: and I remember a female patient who was always tormented by their creeping *per anum*, two or three hours after dining, without the exhibition of any medicine. Such eliminations are common to

all who nourish this kind of Worm.

I have at this time two boys between nine and twelve under my care, in the Westminster Hospital, one of whom voided a considerable number of detached joints, together with several pieces consisting of several joints each, on the first exhibition of the remedy recommended in the first part (page 48). The next time he passed several pieces, and on the third exhibition, the *head*, with the small joints annexed to it, were discharged, and the patient cured. The other boy voided a considerable piece after the first

dose; but I have no assurance, as yet, of his complete cure.

Thus it is evident that the joints of this animal exist for a time when separated from each other.

I have kept them alive, says Dr. Hooper, and fed them for two or three days together; but I do not believe that they are capable of living for any length of time in the intestines, when perfectly detached. Now if each joint were a perfect animal, I can see no reason why it may not live in the intestines for a great length of time.

There are several cases faithfully recorded, and several have come

under my own care, where the persons, if their veracity can be depended upon, (and they had no interest in deceiving,) have voided, during the time they were troubled with the Worm, upwards of fifteen thousand joints. I have attended, says Dr. Hooper, several patients who were martyrs to the ravages of this animal for upwards of *seven years* ; and the number of joints, which during that period have been evacuated, are beyond all conception ; for some passed upwards of fifty [per day, and seldom fewer than twenty.

Mr. Chamberlain mentions cases

which came under his care, where the weakness and emaciation were so great, that the sufferers were incapable of the slightest bodily exertion. For this Worm is by no means solitary, as has been often supposed and asserted; Herrenschwanz, Madam Noufer, and many others, mention their having seen several come away at the same time, from their patients. I had, some years ago, a patient in the Westminster Hospital, a woman about fifty; who for several weeks brought nearly a pint bottle full to shew us, and was greatly reduced and emaciated by them. She was

afterwards cured. The motion of the *tænia* is undulatory ; the first joint near the head contracts, the succeeding ones follow successively, and the animal is at length much contracted, exactly in the same manner as the earth Worm is observed to move, but much less rapidly. By these means the food taken in at the mouth is very soon conveyed all along the alimentary canal.

I have detected milk mixed with a colouring matter running along this canal in the above manner with considerable rapidity.

There can be very little doubt

that the *Tænia* is hermaphrodite. The oscula are believed to be viscera, subservient to the propagation of the species. My colleague, Mr. Carlisle, says, “ In a *Tænia* which I
 “ obtained before it was dead, I
 “ observed, at one part where it had
 “ formed a knot upon itself, that
 “ two pairs of these oscula were in
 “ contact with each other, and
 “ were agglutinated together by a
 “ viscid mucus. I was not, at that
 “ time, aware of the possible
 “ nature of this connexion, and
 “ neglected to preserve them in
 “ that state. I now suspect, how-
 “ ever, that they were in the act of

“ copulation, and that a mutual influ-
 “ ence takes place previously to the
 “ formation of ova.” Vide Transac-
 tions of the Linnæan Society; vol.
 xi. p. 255.

*The Second Species of Tænia, or
my fifth kind of Worms.*

As the first species parts with its joints very readily and apparently at will; this second is distinguished by the property of never parting with any of its joints. This, however, is no characteristic of its species, for when the Worm is expelled, how are we to ascertain whether it ever threw off any joints?

This species seldom exceeds five

yards in length, whereas the first has been seen thirty ells long.

It is no uncommon circumstance in countries where this species is endemial, as Switzerland, Russia, and Germany, to see it come away before it has arrived at its full growth; and this occurring so frequently, has given rise to the notion, that it is a distinct species; but in reality it is no other than the *Tænia osculis superficialibus*, or *Tænia lata*.

In order that every class of my readers may find, in this book, whatever is either useful or curious respecting Worms, I have thought

it necessary to give a translation of the opinions of the great father and founder of medicine, on this subject ; as well as some others of the ancient authors, who are held in the highest estimation.

HIPPOCRATES.

HIPPOCRATES was born in the island of Cos or Coos, in the Archipelago, opposite Caria, in Asia ; in the 1st year of the 80th Olympiad, or about 456 years before Christ. He flourished during the Peloponnesian war, and was at Athens when the great plague raged there, which he foretold. He practised medicine in all parts of Greece, and died at a very advanced age ; it is said in his 109th year.

The accuracy of his judgment in discriminating diseases, his dexterity in the use of his simple remedies, and the purity of his life, spread his fame over Europe and Asia.

He was invited to visit Perdiccas, king of Macedon, who was thought to be in a decline ; but Hippocrates immediately discovered that his disease had no connexion with phthisis, but arose from the re-action of the mind upon the body. The King was in love with a young lady whom he could not marry during his father's life; but his father soon dying, Hippocrates informed the lady of the real nature of the King's disease;

and the exhibition of the remedy was attended with complete success. He was afterwards invited by the inhabitants of Pæonia (Hungary) and Illyria (Dalmatia), to give them his directions respecting a plague which then menaced the destruction of the human race in those districts. Having learned from the Ambassadors the state of the weather during the preceding seasons of the year, and the direction of the winds at that period, he informed them that he could not desert his favourite Greece at such a time, because he foresaw that his advice would be requisite there

within a very short period. This plague soon after visited Greece and Athens with great severity. Hippocrates devoted himself to the cure of the inhabitants in general, and of the students more particularly ; for this spot, the favourite seat of the Muses, of Poetry, Eloquence, and Philosophy, was visited by students from every part of the civilized world ; and continued in the same high estimation for more than eight hundred years. He was invited by the King or Emperor of Persia to attend him ; but he refused, for two reasons, which, in his answer to the King's

Viceroy, he comprises in the expression, "*It is inconsistent with the dignity of a Grecian,*" for no Greek would submit to the indignity of bowing down and worshipping any human being, which every person who approached the Great King, must do : his second reason was, that as Artaxerxes was at that time carrying on war against Greece, which Hippocrates considered as his native country, he would not contribute his service to its greatest enemy.

On the round Worms.

His opinions respecting these are occasionally scattered up and down in his works ; not thrown together as they are concerning these and the *flat* Worms, in his chapter on Worms.

“ Children during dentition,
“ especially during the cutting of
“ the eye-teeth, are infested, among
“ many other diseases, with large
“ round Worms and ascarides.”
Aphor. 111. 25 and 26.

“ The old man who died, had

“ his wife ill at the same time, and
 “ she had a maniacal fury of an
 “ unusual and unaccountable kind
 “ upon her ; but upon discharging
 “ a thickish Worm, and taking
 “ the refreshment of a little food,
 “ she immediately became calm,
 “ slept sound, and perfectly recover-
 “ ed.” Epidemics, Book iv. ch.
 29. Edit. Vander Linden.

“ I come now, says he, to speak
 “ of the BROAD FLAT WORMS. I
 “ assert, that they are generated
 “ during the time the child is in
 “ the womb of its mother : for it
 “ is incredible, that after birth the
 “ fæces should remain so long in

“ the intestines, as, by their con-
“ tinuance and putrefaction, an
“ animal of such a magnitude
“ should be there generated. A
“ child in health never retains its
“ fæces more than twenty-four
“ hours; and such an animal could
“ not be produced in many days,
“ supposing the child had no stool
“ during the whole time.”

“ Many seeds of diseases shoot
“ forth while the infant is in *utero*,
“ in this way ; that is to say, both
“ the milk and the blood being
“ redundant during this period, they
“ putrefy and become morbid, and
“ hence this animal is generated.

“ In the the same manner the
“ round Worms are generated.

“ As a proof that this is the case,
“ we observe, after birth, that the
“ mother's milk, and the things
“ she gives the child, evacuate its
“ intestines ; and both prevent
“ putrefaction there, and at the
“ same time dilate the intestines
“ themselves. As soon as the pro-
“ per laxatives have been exhibited,
“ *many children pass both round*
“ *and flat Worms with their very*
“ *first excrement.* And though
“ they may not discharge any, the
“ seeds of them are in the intestines,
“ and are there developed. The

“ large round Worms generate
“ there, and propagate their species;
“ but the flat ones do not, though
“ some people say otherwise. A
“ person afflicted with Tape
“ Worms, passes single joints, one
“ after another, like gourd seeds,
“ with the fæces; and there are
“ people who call these the young
“ of the animal, but very errone-
“ ously in my opinion. Nor can
“ such a quantity of young ones be
“ generated and nourished by any
“ animal, even supposing there
“ was room enough in the bowels
“ for such a purpose. As the
“ child grows, the Worms also

“ enlarge ; being fed by the things
“ which are taken into the stomach
“ in the way of food, till they
“ arrive at a length commensurate
“ with the intestine itself: this
“ happens to some very early in
“ life ; to many more, from eight
“ to sixteen, and to others when
“ at man’s estate.”

When the Tape Worm becomes commensurate with the intestines, it still goes on lengthening, and pieces of the tail separate and are discharged by stool like gourd seeds, often considerably larger. This happens while people are walking briskly or working hard, so that

their insides may become warm ; then the Worm descends, is inflated, and drops, or is pulled away. That my opinions on this subject are well founded, the proofs are these : If any skilful physician undertakes the cure of a patient afflicted with flat Worms, and administers a proper bolus or draught, supposing the person to have been properly prepared ; the animal assumes a round form, like a javelin, is discharged, and the patient is cured. If the first dose should not succeed, and the use of the remedy be persevered in, the strait part of the Worm is torn off, to the length of a yard or

two at least ; and after it has been so torn asunder, no more parts are discharged for a long time. Afterwards they grow again. This is a proof that the Tape Worm does not bring forth young, but is detached. There is a species of it that resembles pieces of the inner coat of the intestines, and has these marks or appearances : A person passes, time after time, the resemblances of cucumber seeds ; and when the patient has fasted long, it shoots up to the liver now and then, and gives pain there : sometimes saliva flows from the mouth, and sometimes not. Some patients lose

their voice when this attack upon the liver is violent, and the flow of saliva is very abundant ; it soon abates, however, and a pain is felt in the stomach. Sometimes a severe pain is felt in the back, between the shoulders. These are the common signs of the broad Worm, and the patient is but little weakened for some time ; but when he becomes much weakened, recovery is very rare ; for this Worm devours a considerable part of our nourishment.

If the cure be properly directed, the *Tænia* may always be expelled ; but if not, there is no spontaneous

cure. It seldom proves fatal, but grows old with the patient.

These are my observations on the Tape Worm; both as to the origin and the signs and symptoms which attend that disease.

Book the 4th, on the Distinction of Diseases, ch. 27.

CELSUS.

AULUS Cornelius Celsus, the Roman Hippocrates, was an eminent physician and surgeon at Rome during the reign of Augustus. He was contemporary with the brightest ornaments of that age; Cicero, Horace, Virgil, Ovid, and the physician Asclepiades the friend of Cicero. The importance of his observations and precepts, no less than the classical elegance of his style, have procured for him the

admiration of every succeeding age ; and the more he is read, the more he will be admired. The manner of living among the Romans, was alone sufficient to render the diseases of which I have been treating, very rare. This sufficiently accounts for the short notice taken of them by our author.

When speaking of the signs of a happy event in diseases, and the contrary, he says, “ The appearance
“ of some Worms in the course of
“ the disease, ought to excite no
“ alarm.” Lib. ii. ch. 3.

In his fourth book, which treats of internal diseases of particular

parts, especially the mouth and alimentary canal; after dysentery and lientary, he says : “ But sometimes Worms occupy the intestines; and they are commonly voided or creep out downwards; but sometimes, which is more shocking, through the mouth: and sometimes we see the flat broad Worms, which are the worst sort; sometimes the small and large round ones.”

If they are of the flat kind, a decoction of monk's-hood lupine, or of the bark of the mulberry-tree, to which bruised hyssop, or a gill of pepper, or a little scammony should

be added. Or let the patient eat plentifully of garlic on the overnight, and on the morrow morning take an emetic: on the next day, let him take a handful of the scrapings of horse-radish root, and boil them in a gallon of water till two-thirds is evaporated; strain off the decoction, add a little nitre or native salt to it, and let it be drunk fasting. Three hours afterwards let him take two draughts of water seasoned with anchovy pickle, and sit over a pan of hot water. But if the Worms are of the round sort, which principally harass children, the same remedies may be employed, or

milder ones ; such as the seeds of nettles, of colewort, or of cummin, in mint-water ; or a decoction of *wormwood* or hyssop in wine and water ; or the seed of nasturtium bruised, with vinegar. The eating garlic is of use ; and so are clysters of oil.

SCRIBONIUS LARGUS.

THIS writer flourished in the time of Tiberius, the second Roman Emperor; consequently, about the commencement of the Christian æra. In his work on the composition of medicines; for killing Ascarides, he recommends the eating plentifully of garlic for three days; or the Macedonian fern dried, powdered, and sifted, and made into an electuary with honey. (They

had no treacle or sugar.) Four hours afterwards give a brisk dose of aloes and scammony ; which he advises to be administered in wine and water sweetened with honey : And when it begins to operate, the patient should sit over a pan of hot water. For the large Worms, the Sardinian herb (wormwood or rue), and raspings of hartshorn boiled and pounded together, he says, will be suitable enough.

CAELIUS AURELIANUS.

THIS extraordinary author flourished about the same time as Scribonius Largus, and is the only writer extant who delineates the principles and practice of the Methodic sect, of which he was a zealous disciple.

He was a native of Sicca, an inland city of Numidia, in Africa ; which may account for the uncouthness of his style, for it is neither Greek, Latin, nor Arabic, but something of each. Dr. Conrade Amman,

who appears to have been the first
 editor of this author's works, says,
 if we had not known beyond a
 doubt where he was born, his style
 would have betrayed him : " Ejus
 " tamen dictio sesquibarbara et
 " semigræca aliquod ex Africa
 " monstrum proderet. Oratio qui-
 " dem ejus inadsuetis nec facilis
 " admodum est nec plana : succi
 " tamen bonique sensus plena,
 " mascula, sale elegantissimo passim
 " adpersa ; in reprehendendis
 " veterum erroribus arguta, ubique
 " sublimis.

" Character *Caelio* proprius est,
 " quod morborum historias a capite

“ ad calcem non tam describat,
 “ quam vivis et ex ipso naturæ sinu
 “ sumptis coloribus pingat, tanta-
 “ que exactitudine tum morborum
 “ tum adhibendorum quovis tem-
 “ pore remediorum articulos et
 “ momenta circumscribat, ut parem
 “ vix habeat.” In this eulogium
 on our author’s Histories of Dis-
 eases and Details of their Symptòms,
 I most cordially concur.

In his fourth book, on Chronic
 Diseases, which he calls *tardæ pas-
 siones*; when speaking of disordered
 bowels, he observes; “ Sometimes a
 “ *lax* state of the intestines (the
 “ *laxum* of the *methodics*) super-

“ venes, without the *appearance* of
 “ any Worms ; but their presence is
 “ evinced by the irregularity of the
 “ appetite, weakness, and paleness,
 “ with loss of flesh : and one while
 “ a dry cough, excited on slight
 “ occasions, at another time by
 “ swooning or *Leipothymia*. In
 “ children, while sleeping, restless-
 “ ness, groaning, grinding of the
 “ teeth, an unusual desire of lying
 “ on the belly, and a screaming
 “ without any obvious cause ; and
 “ sometimes a sudden loss of
 “ speech.”

“ Spasms occur, and in children
 “ the assemblage of the Worms is

“ often so great, that a sensible
 “ hardness may be felt about the
 “ navel, where before there was
 “ great softness and emptiness ;
 “ and by their eating out, (*eversione*,
 “ turning out,) death is occasioned.
 “ The *pulse*, as Themison observes
 “ in the ninth book of his epistles,
 “ is *unequal*, and generally deficient.
 “ The way or manner of their
 “ exclusion is various ; by the
 “ bowels, through the *stomach* and
 “ mouth, or through the nostrils.
 “ Sometimes several unite them-
 “ selves in a knot, at other times
 “ they are voided singly, of a blood-
 “ stained appearance, or tinged

“ with bile; sometimes per anum,
 “ with the fæces or with bile and
 “ mucus.

“ The injury they do depends
 “ upon their number, the part they
 “ inhabit, their vivaciousness and
 “ strength, and the degree of fever
 “ that accompanies or is occasioned
 “ by them.” He then proceeds to
 lay down the diagnostics of Worms,
 as distinguishable from those dis-
 eases which are attended by simi-
 lar symptoms; as Apoplexy, Epi-
 lepsy, Hysteria, Catalepsy, Ileus,
 Stomach complaints, depending upon
 acidity or bile, Phthisical or Tabid
 diseases, and Indigestion. We

observe that he makes no mention of Hydrocephalus as imitating the symptoms, or Ophthalmia as produced by Worms. For this information we are indebted to our own countrymen and contemporaries.

Perfectly *methodically*, he next details the *Prognosis*, as delivered by various authors. And lastly, he delivers his means of *Cure*. For *Ascarides* he recommends clysters of oil, infusion of wormwood, a decoction of pomegranate peel or galls, auri pigmentum, orpiment, or yellow arsenic; which, he says, the Greeks call *arsenic*.

For the Lumbricoid *Ascarides*, he

recommends the same remedies as before for the small species, with onions, garlic, mustard, cardamoms, aloes, gentian, castor, bitter almonds, and squills.

For the Tape Worms he advises oil, and every other day clysters of it with native salt; liquorice with salt; and when the animals are felt moving, to sit over hot water, lest they should be shocked by the sudden transition from hot to cold, and refuse to advance.

To prevent relapses, he prescribes the very same exercise and diet that I have done.

Some specimens of his style

might amuse classical readers ; and there are also several other old authors, whose opinions I should willingly have detailed ; but must postpone them for the present ; and if the public shall call for a second edition, both those and some other additions shall be made.

THE END.

ADDENDA.

IN my extracts from *Celsus* I have omitted a line or two, of the importance of which I was by no means sufficiently aware.

His words are, “ Posteroque die
 “ mali punici tenues radicules col-
 “ ligat, quantum manu compre-
 “ hendet; easque contusas in aquæ
 “ tribus sextariis dequoquat, donec

“ tertia pars supersit ; huic adjiciat

“ nitri paulum, et jejunos bibat.”

This advice, given nearly two thousand years ago, I have since learned from Medical gentlemen, who have long practised in the East Indies, is the only remedy for the cure of Worms, on which the natives place any reliance. The same experienced practitioners assure me, that they use no other ; but that they employ the bark of the larger roots as well as the small fibrils in their decoctions, and always with success.

Though Celsus calls the salt which he recommends, *Nitrum*, I do not believe it to have been our

nitre ; but soda or natron, or perhaps bay-salt or rock-salt. Nitre or sal-ammoniac would have been much better than either of those, but he had them not.

The Americans employ gunpowder in treacle ; and it is a most safe and efficacious remedy. The dose is from a drachm to an ounce.

