How we are born : a letter to parents for their children / by Mrs N.J.

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Publication/Creation

London : C.W. Daniel, 1906.

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HOW WE ARE BORN

A LETTER TO PARENTS FOR THEIR CHILDREN

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HOW WE ARE BORN

A LETTER TO PARENTS FOR THEIR CHILDREN

BY

MRS N. J.

WITH PREFACE BY

J. H. BADLEY

(HEADMASTER OF BEDALES SCHOOL)

LONDON

C. W. DANIEL

SURREY CHAMBERS, 11 CURSITOR STREET, E.C.

1906

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PREFACE

THIS little book is an attempt to tell, in language simple enough for a child to understand, the truth, the whole truth, and nothing but the truth about the facts of sex. It is written by a mother who has talked of these things to children; and she has endeavoured to write just as she has talked. It may be that a phrase here and a turn of thought there will reveal the fact that she is writing not in her mother-tongue but in an adopted language; but that it is a mother's language to her child will be plain to all who read the book. Every page of it has been read to the boy for whose sake she first sought to embody these facts in simple language that should conceal nothing; having passed that test, it does not need any criticism

on my part, only a word or two as to what I conceive to be its use.

Most parents are now convinced that it is better to speak openly to their children of these things than to leave them to gather their knowledge of them as they may, perhaps from unclean sources, perhaps in a way that will shock and pain them, perhaps too late to save them from morbid imaginings and harmful habits. But there are many who, while they wish to speak, do not know how best to do so, or even how to begin. For such this book is written. For my own part, I do not believe in putting *any* book on this subject into a child's hands and leaving him to *find out* the truth from its pages. For one thing, we can never be sure how far a child will understand what he reads; but, apart from that, my feeling is that his first knowledge of these things should come to him not from any stranger, however wise, or from any book, however simple, but from his own mother; for only so will the whole subject be associated in his thoughts

and feelings with what is best and purest in his nature. This book, then, is rather for the mother than the child; to be used either as supplying materials for talk and suggesting lines of treatment, or else for reading aloud, or perhaps in both ways. In either case, the portions chosen for talk or reading, and the extent of the explanations given, should certainly vary with the child's age and eagerness; his questions are the truest test of how much it is wise to tell him, and how much he can understand. I would only urge two things: first, that he is *never* put off with anything untrue, but his questions answered truly so far as it is possible for him to understand; and secondly, that before they have fully outgrown boyhood or girlhood, both boy and girl shall know, together with the story of birth here set out, *all* the facts about their own sex touched upon in these pages. When mothers recognise at once the extent of their responsibility in this matter, and the extent of their opportunity of associating clean know-

ledge with right feeling and high motive, then indeed shall we see not only our children leading happier and healthier lives, but a growing hope for the future in cleaner and nobler social ideals.

It is in the hope that it may bring to some the help that they are seeking, that I wish this little book God-speed.

J. H. BADLEY.

BEDALES SCHOOL,
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A LETTER TO PARENTS

[INTRODUCTION]

THIS book is not meant for all parents. For whom it is meant. Why is it that so many parents find it so difficult to speak to their children on the subject? Books which try to explain without explanation. The pure, childish mind does not need what is called "delicacy." What it does need. How and why this book is written. How and when it is to be read. A choice left to parents. Different types of children. Inevitable questions answered. A boy's views of the matter.

THIS booklet is not meant for all parents.

1. Not for those who think that "they have themselves grown into decent people without any such unnecessary explanation," and that "the whole question can be safely left to the child's companions, in whose hands it has been for centuries."

The enlightened "companions"—

victims of the same easy-going sort of parents — will really do their part: namely, inspire a wrong standpoint in the ignorant child, and spoil for ever the soil for any clear and pure thoughts that might otherwise grow in its heart.

2. Not for those who think it "so sweet" for their child to be forced to believe that "an angel brought it," or "a stork," or "the doctor," or "a nice old lady"; or "the baby came in a parcel," or "was found in the back-garden," etc.

On hearing the same answer over and over again, their child stops bothering them as soon as it finds other sources from which to satisfy its natural desire for knowledge—dirty sources, perhaps, but more reliable than the "storks and parcels," as it would naturally seem to the child.

3. Not for the "refined" people who think it "shocking for a child to mention such subjects."

They will go on blissfully imagining that their child never thinks and will never try to find out anything in the

sphere which to *their* mind is only "indecent."

4. Not for those whom this educational question does trouble, but who long to save their children's innocence through ignorance.

Innocence is not the result of ignorance, but solely of a clear understanding of the whole question and of a *conscious* feeling towards the true aspects of it presently to be distinguished.

No: this little work is not meant to persuade anybody or preach to anybody. It is meant to give some possible help *only to those* parents who *want* to do their part, but don't know how to begin; who have a clear idea about the present state of things; who want to save their children's nature from the poison of cynicism, but who do not know how to speak, or what words to use.

It is for them alone that a mother's personal experience may be of some help; they alone can find the following part of this book useful at different stages of their children's growth; and

to them alone refers all that follows in this "Letter to Parents."

First I would like to suggest a reason why it is that so many parents find it difficult to speak to their children on this subject. Is it not due to a confusion in our minds of two things? The sexual question has two aspects:—

(1) The reproductive instinct, which is shared by all living beings.

(2) The hideous degradation of this instinct by Man—Man alone.

The first is a natural law: it applies to Man equally with all animals for the purpose of the reproduction of his race —and for this purpose only. But Man in many cases does that which makes him sink *below* the animals: and there he breaks that other law which placed him *above* them by his consciousness. With the help of this spiritual nature given to Man, his animal instinct of reproduction can be satisfied without moral or physical degradation.

Many people feel that one cannot help being rather ashamed of one's own sexual experiences, as being a part of

our animal nature. Some are indeed merely animals, or even below the animals, in this respect; but when man and woman follow their reproductive instinct as elevated human beings are meant to follow it, there is no shame in having one part of our nature created according to the great general law.

And, thought of in this way, the work of reproduction will become a true work of creation: for when the animal instinct is awakened only through higher feelings, through complete understanding and union of the inner selves, then this human use of the animal instinct will improve every succeeding generation, and make life really human and spiritual. There is no shame in such *creative* sexual intercourse.

Whereas, when the law of reproduction is reduced by Man to a state of immorality to which there is no parallel in the animal kingdom—then we come to the other side of the question of which every human being ought to be ashamed.

It often happens that *these two aspects*

of the sexual question exist in a state of confusion in people's minds. At the first thought of "explaining all" to their children, parents shrink from the vague idea of telling them that the reproductive organs are mainly used by people as means for physical pleasure, and sexual intercourse as a subject for mere amusement.

But once we have realised that these two things are distinct, and that the misuse of a natural function for selfish pleasure is no part of nature's intention, then, surely, it becomes easy to explain to the child the wonder and beauty of nature's methods of working out the great law; and, later, as the child grows and develops, to make him understand—as sooner or later he must—the hideousness of Man's degradation of this law.

If this is the way you think of the matter, you cannot fail to implant in your children's minds pure feelings and clear thoughts about it all; and great will be the help they will gain from such teaching when, in their own experiences

of life, they are exposed to all manners of impressions, good and bad alike. From these last you cannot shield them, but you can strengthen them against them, so that they will not find a ready lodgment in their minds, and become, whether consciously or unconsciously, centres of infection.

There are one or two books on this subject which try to *explain* to the children the sexual question *without explanation*: the authors beat around the bush, and their critics call it "delicate treatment of the difficult question." One cannot help thinking that these people have not come as yet to a clear definition themselves; and that there is something about their ideas that needs "delicacy" — or, otherwise, *hiding*. They continue to judge from the point of view of a grown-up person in whose mind the great law and Man's immorality have got mixed up together.

But the child does not need any "delicacy": it needs plain truth and absolute absence of falsehood on the part of his parents. Delicacy in most

cases means—as it does here—avoiding subjects of which one is ashamed; but a pure child certainly does not expect its parents to be ashamed of anything or to hide anything; and "delicacy," therefore, can by no means be useful or sensible here—quite the reverse. Everything but truth is out of place here, and "delicacy" makes a very false note in that chord.

Perfectly honest, clear, and sincere explanation of the universal natural law will lead to a feeling of deep tenderness in the child's pure heart towards its parents; while an equally honest explanation of the wrong which many people make of that great law—provided that the explanation is given at the proper time, just when the young boy and girl are likely to begin to trouble in their minds about some new impressions of life—will lead to proper views and feelings towards all meanness and impurity.

The following part of this book has been written after many frank talks with children. The range of the scientific

and social facts put into it is due solely to the range of the questions thoughtful children will ask. They will put them differently, according to their individual impressionableness and mental development; perhaps there are dozens of questions more that other children will ask; but all that follows here is the outcome solely of my own experience, and I have given the explanations required by the questions that children of seven, ten, twelve, fourteen years of age have asked me.

Of course a talk and oral explanation will not need, at any one time, all that is discussed in the book: the questions of the child will lead the way themselves, and show what needs to be explained at that particular period of its mental development when the talk takes place.

All the explanation that follows is written in the shape of a letter, or a talk, addressed straight to the child; but I do not mean by this that the book must be given into the child's hands to be read all at once. The range of facts put into it would be too much for a child

who heard nothing about them before from his parents ; and one could read the whole of it only in the case when all essential facts have been told already, and when the boy or girl is big enough to learn more and to think more.

I have put it into the shape of a personal address for two reasons : firstly, because I found it natural to write as I actually spoke, although my talks with the children consisted of two or three successive conversations with each of them, while in the book I had to put it all together ; secondly, because I had in my mind those parents (I have met many such) who understand the necessity of explaining perfectly well, and *want* to speak to their children, but say that they do not know *how* to speak. In these cases the shape into which I put my explanation might bring some help, perhaps, whether the parents just read it, and then speak for themselves, choosing *their own homely expressions*, or whether they prefer reading aloud from the book those parts which they think it right for their child to know at that precise time.

In any case, the only right way (as is agreed by most sensible people) is to answer honestly the very first question of the child: "Where did I come from?" The younger the child is, the easier it is to answer plainly for those parents who shrink from the idea of telling all. And then, gradually, as more questions come to its mind, the child—knowing no false shame or fear and expecting nothing but truth from its mother—will come to her with an open heart and ask more. So everything will be sincerely and seriously discussed by degrees, pure feelings will grow, and the mother will be able to sleep quietly, knowing that her child is really hers with its whole mind and heart.

I involuntarily say "mother," because on the whole this is more a woman's business, although, no doubt, there exist many fathers who are so friendly and open with their boys and girls that in individual cases it is just their business more than the mother's.

I have given full explanation about the facts of gradual development of

both sexes, keeping in view that parents will select this or that chapter of the book according to their want. But in my own opinion there is no harm to be got from knowing even what seems to be too much. If the child is too young thoroughly to grasp everything that has been told to it, *the right impression* will still remain in its heart, though the facts may fade from its memory. That impression will make the child come to you and ask again when its time comes.

There are some children, I know, who never come to think of all these things, and even shrink from any conversation about them: but (1) they are very rare exceptions; (2) they are not insured from having their purity painfully shocked by some chance coarse impression from outside; and (3) they are not likely to be better equipped against extreme passion (that may come over them some day) by their *unconscious* purity than they would be by one that is *conscious*.

And, again, the mother of a naturally

inquisitive child ought to feel that this is a matter in which no one else ought to come between her and her child. She ought to do her best not to miss the strong moral bond which is formed between mother and child through perfect frankness.

Of course, if the child asks its first question, "Where did I come from?" at the age of three or four, the answer can be naturally quite simple and short, although quite honest; but later on its first question which has anything to do with the sexual vices must be answered just as plainly and truly. It would be unwise and even unkind to create exclusively sweet and good impressions in the young mind, to run the enormous risk of letting it all fall down with a crash at the first "enlightening" talk or act of some "enlightened" individual amongst other children, or a casual scene, or even an unguarded talk among some "grown-ups." The child observes everything, and promptly jumps to conclusions.

I have included in the last paragraph

of this book several points on which every observing child, at one age or another, *will* ask you questions as soon as it feels that you are sincere and honest about it all. These questions (and many more) in most cases *do* rise in the young mind—whether you helpfully come to meet them, or whether it is doomed to search for answers through miserable and secret ways. And, again, I would suggest what seems to me the most important thing of all: divide in your own mind and heart the great and natural from the mean and shameful, and *no need* of what is called "delicacy" will appear; truth alone will be wanted, and will help of itself.

And a few lines more.

A boy of about thirteen, on hearing that I was beginning to write this book for children, asked me with surprise:

"Why do you write it? Surely everyone knows all that!"

"There are many children, at any rate," I answered, "who do not know. So I am writing it all plainly."

"But don't their mothers tell them?"

"Many of them don't."

"Why?"

The surprise that sounded in that "Why?" at once sent me back to my suggestions discussed before. And, believing in truth as the chief and foremost principle of education, I answered:

"Because they are ashamed to speak of all the uncleanliness which people so often make of the sexual law, as you know. And then their children grow up without understanding clearly anything about themselves, or the animals, in this respect. So I thought I would try and give a full explanation which might, perhaps, help the mothers to speak of all the details plainly, and so help the growing children to understand what is so important in our life."[1]

[1] Here the author finds it necessary to explain that, in her own experience and opinion, most desirable results are obtained through speaking—at convenient occasions—about the common vices of sexual life as well as of its good and natural sides. And the explanation of that evil is not included in this pamphlet only through the difficulty of publishing such discussions in England.

"Oh, do write it, then! And, please, let me read it before you print it. You see," he explained, "I will tell you whether every boy will understand it perfectly clearly."

His plan struck me as a sensible one: the preliminary criticism of an "editor" under fourteen years of age ought to be an advantage in this case. The boy became most interested in my work, and so, when I finished it, we attentively read together every line of my manuscript. Some places he found "too babyish," and suggested more scientific expressions; others—too scientific, and we made them more easy to understand. I consented to all those corrections,

Originally this work appeared in Russia (St Petersburg, spring 1905), where many parents find it unavoidable and necessary to tell about the sexual vices to their children when the latter are very young, because of the dirty and loose talks between the children (of 9–10–12 years of age, to say nothing of the elder and "experienced" ones) at schools.

Consequently, the suggestion of an explanation of the common vices in this book in Russian was met with the same approbation as the description of the normal facts of sexual life.

thinking that he must be a better judge in this case than any grown-up person could be. And, when it was ready, he exclaimed:

"Now it's all right! They must see it all quite clearly now!"

With this "editorial blessing" I am letting my work out into the world, with a deep desire to be helpful (if only a little) to those parents who won't be shocked with the title of the book, but who feel the necessity of an honest talk and yet "could not start it" till now.

Now it is time for us parents to strive to get rid of the ill effects of a great blunder, and to establish the bonds which are not yet fully appreciated. But when they are established, a great step will have been taken in the contest with the evil whose name is: "The degradation by Man of the universal animal instinct of reproduction."

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HOW WE ARE BORN

I

ACCORDING to the great and wonderful law of nature, every living being in our world grows from minute particles of its parents' bodies. Nature ordered every being to continue its generation, and so it goes on and on, century after century; and all its children, grandchildren, and posterity remain like each other and belong to one big family. Had it not been arranged so, there would be no feeling of care and love such as we all know and enjoy now, because we all should be strangers to each other—single beings. . . . Doesn't it make you feel uneasy even to think of it? But our world is adorned with tenderness; and this feeling has been made natural to us by the Power which has divided us all—all living creatures

—into different kinds: and so we are united in the depths of our hearts to all other beings similar to us, even if we sometimes get angry and take offence and offend others.

This involuntary feeling of love towards *our* species grows and spreads from our hearts on to other creatures, and we are glad when we see the same devotedness and care amongst them. We like to see a hen bravely shielding her little chicks with her wings against a strong hawk; a cock standing with his beak pointed to a grain of food he has found, and loudly calling the little ones to come and take it; a cat or a dog eagerly licking her offspring to give it a proper "all-round wash"; ants busily dragging their larvæ into a new place of safety if they think that the old one has become cold or dangerous; and, finally, we admire a man sacrificing his life for the sake of another who is not even a friend of his. We are pleased to see all that, because in our own souls there is the same feeling of love towards our fellows.

This feeling was kindled first of all at the time when we—each of us—lay, a little babe, in the arms of our mother, who fed us from her own breast. We felt so sweet, so comfortable! . . . At first, thankfulness and love towards her were unconscious; then it grew conscious, we saw her care and tenderness and began to love not her only, but all the people with whom we felt happy.

Now, after having read this letter attentively and seriously, you will see better still how natural it is to love one's own father and mother; and you will see how much the happiness of your own future children depends on whether you will grow into good and healthy men or women or not; because with a pure heart and body you will be able to take part in the great work, you will be able to help mankind to continue its life by giving it not sickly, miserable offspring, but bright and healthy children, who, in their turn, will know how to help all that toil and suffer in this world.

II

LET us begin with the simplest facts in which you are sure to have taken interest sometimes. You know that if you take a potato and cut it in several pieces so that each has one of the little marks that speckle the peel, and if you plant these pieces separately, out of each of them will grow a potato-plant which will produce exactly the same kind of fruit, of similar taste and colour to the one which it sprang from. We are so used to this that we find it quite simple, and—without any doubt or surprise—we go and choose for planting the kind of potato which we want to gather in our kitchen-garden in a few months' time.

With like confidence we cut off from the bulbs of hyacinths, tulips, and narcissi the smaller bulbs which grow on

their sides; we take them off gently, plant them separately, and rear hyacinths, tulips, and narcissi, just like those which their mother-bulbs brought: the children are exactly like them.

If we want to increase rapidly the number of dahlias in our garden without waiting for their seeds to come up, we cut off one of the bulb-like roots in the autumn and plant it by itself in the spring. The old plant will not suffer from this at all, while we shall see a young one growing from the segment of its root. And if we take two bulbs of two different dahlias, say, of a red one and of a white one, cut both bulbs in half longways, take one half of each, tie them together and plant them in that condition—we shall find that the new plant will bear flowers with striped petals: red and white. Evidently, each of the halves imparted to the children the qualities of its own kind.

In the same way—by division or "fission"—the roots of pinks, lilies of the valley, all kinds of daisies, chrysanthemums and many other plants can

multiply. By cutting off and planting separately raspberry-canes, strawberry runners, or shoots of violets, we can easily increase their number; small cuttings of fuchsias, heliotropes, geraniums and others also grow into new plants if planted under favourable conditions. All kinds of moss, bracken, mushrooms and lichens do not need even this: they multiply by means of tiniest particles falling off their bodies.

As you see, in each of these cases a particle of *one* plant only is wanted to give life to a young one which has the appearance and bears the qualities of its mother. But it is only a small number of plants which can continue the life of their species by means of fission: the majority need a much more complicated way; and however carefully you cut their roots, or shoots, or runners, nothing will grow from them. Of these complicated ways of reproduction we will speak presently; but first let us see how the smallest and simplest species of the animal kingdom multiply.

III

You have heard, perhaps, of amœbæ—the simplest kind of the smallest animals on earth, which are usually called by the general name of infusoria. They live in thousands in a drop of water, and can be seen only through a microscope. The amœbæ consist just of one little lump of half-transparent, half-liquid, jelly-like matter, with a still smaller transparent body (or nucleus) inside. This plain and shapeless animal cell has no mouth, no eyes, none of the organs of the senses, and no interior organs. All it can do is to suck in fluid or solid pieces of food, simply through the surface of its body, in any spot. The food gets decomposed and modified, and the useless parts of it are cast out by the same simple means. You see how plain is the anatomy of these animal cells; and nobody had any

notion of their existence till (about 1590) the microscope was invented.

Well, we find that these living creatures multiply by the same simple process of division as some plants do. The observer can clearly see through a microscope how an amœba suddenly stops eating, rejecting the remainder, stops moving, and gives itself up to an important business: its body suddenly begins to divide itself—the division goes right through the nucleus and through the whole cell—the equal halves gradually fall apart, and two new creatures begin to float about comfortably! These two children grow up independently, and come to the age when they feel they must do their duty to continue their kind: and then *they* stop all other "business" and each splits into two young beings; their children grow up and do *the same*; and *their* children also!

Gradually the family grows very, very numerous. But then comes the time when the new generations appear to be weak and sickly: the young ones

do not grow up to the standard size, and the members of the family die out quickly. Then the little beings, following the great law (although they are perfectly unconscious of it), act in a most sensible and even touching manner: their company becomes very restless, they do nothing but swim about excitedly, as if searching for something; they meet, stop for a second close to each other as if "trying" each other, and part again and move on and on. But gradually they all find what they want; they stop in twos, and then each tiny creature presses itself closely to the other; their substance begins to melt together, the nuclei meet and become one, and from the two former bodies appears a new being. This child, in whom the double strength of the two older beings is now concentrated, becomes energetic and strong; and—after it has lived through its independent life—the old story begins over again: it splits into two children, each child into two grandchildren, and so on and on, till the numerous posterity getting weak

comes to the instinctive resolution that it is time to join in couples again and redouble their strength for the sake of a safe continuation of their race.

The same way of forming new beings through plain fission, or division of an old one, can be watched even among much larger animals: with some kinds of worms one section of their body, which has been accidentally torn off, is quite sufficient to serve as a beginning of a new animal, and all the lacking parts will gradually grow on to it. Neither does the star-fish (the skeleton of which you are sure to have seen among shells in the show-windows of seaside places) get into difficulties if one of its rays gets torn off: a fresh one will grow in its place, while the separated one will have all the four missing rays gradually grown on to it, and so two star-fish will spring from one.

Other kinds of infusoria and many others of the simplest animals have a somewhat different way of reproduction. The old being does not split in two, but on its surface there appear little marks,

or gems, like those on the potato peel, and then it splits into as many separate young creatures as there have been gems in it, so forming a whole family. (This is called "gemmation.") In the cases when the mother-being is fixed like a plant to a certain spot—like corals, sponges, and other polypi—young ones begin to grow on every gem, and so the family gradually forms something like a little shrub the foundations of which consist of the remnants of older beings which die out one by one (after the young ones have sprung from them), and their skeletons alone remain.

IV

You see that both these ways of reproduction—fission and gemmation—need only *one* older being from whose body the young ones generate: potatoes, hyacinths, fuchsias, dahlias, corals, some kinds of infusoriæ, and worms—they all need just one specimen, any single one of the old ones, to bring forth the next generation. But even then the amœbæ, as you saw, join now and again to increase the vigour of their posterity; and, as soon as we come to a higher class of beings, with a more complicated structure, we find in it two sexes: male and female. They both belong to the same family, both yearn to continue the qualities of their kind in their children, but this task is divided between them. It is arranged in a great and wise manner: the child can come into the

world only if male and female natures both take part in the reproductive work: father and mother both must give a particle of their body and of their strength. And the task is definitely divided between the two: the first part of the work is fixed for the father, the second for the mother.

Let us pass on to the plants again, as with them it is simpler, and you will easily see why. The plants have not got any conscious feeling; with them the father's and mother's natures do their work instinctively, without choosing or knowing each other.

You have probably heard the word "organism," which means the combination in one being of all the different *organs* or parts of it through which that being gathers and grows its strength and thus *lives*. Such are, for instance, organs of digestion, organs of respiration, organs of sense, nervous system, muscular system, blood circulation, etc. You have seen in each plant its organs of nutrition and respiration: its roots and leaves. The plant has no organs of

sight, or motion, or taste, or hearing, as the majority of animals have; but it has its flower—even if it is quite a small and unnoticeable one—and this flower represents its essential part, its substance and destiny, as it contains the *organs of reproduction.* Even those plants which can multiply through plain fission have flowers.

At the first glance you will not find any difference between the flowers of the same plant: the same colour, the same size and shape. But tear off the petals of several of them and inspect attentively the central parts; then you will find the following.

In some flowers you will see several thin stamens standing round the centre; on their tops little yellow oblong balls, or anther-cells, are poised lightly, looking very soft and delicate: they are filled with tiny particles of yellow flower-dust or pollen. This pollen in some mysterious fashion contains the very beginning of life for the next generation; the stamens with the anthers form the male organs of reproduction,

and so the whole flower is a male one, and we can call it the "father-flower."

But this father-flower cannot start the life of another plant without the mother's help; and so (on the same shrub or on another one of the same kind) you will find flowers appointed for the continuation of the mutual task. In the centre of the mother-flower you will see a pistil—like a tube widening at the bottom—with a stigma inside. When the female flower is quite developed its stigma opens at the top—just once in its life, purposely to fulfil its destiny. By this time some of the male flowers are also developed: their anther-cells open and the pollen falls out and remains stuck to them. At this moment mother- and father-flower both are ready to give life to their young ones. But how shall they do it? They are motionless and therefore need somebody's help to let them join their powers. Happily there are many helpers around them: there comes the wind, there come the butterflies, the bees, the wasps, the bumble-bees! . . .

The wind takes up a little of the pollen —or some of it sticks to the bee—the wind blows it or the bee carries it over to the mother-flower, and some of the particles fall on the open stigma. That is just what is wanted, and the stigma at once sends them down into the interior of the flower: there the inside of the tube is wider, and deep within it lie concealed one or more little ova; they are very small and delicate, but can be compared with the eggs in a mother-bird's body, as their purpose is just the same. They are far from being seeds: they are just waiting for their life to come and to make seeds of them. And the life comes with the father's pollen: as soon as it reaches them the process of joining the two sources of strength begins. Each little egg or ovum, produced by the female reproductive organs (the ovaries), was powerless before, but now it is fertilised and begins to grow and develop. Gradually it turns into a seed—or the child of the two parents —containing in itself a future plant with all the qualities of its ancestors.

The coating surrounding the ovary begins to grow too. With some plants it grows fleshy and turns into an eatable fruit surrounding the seeds (apples, melons, grapes, strawberry, raspberry, etc.). With others the seed is a single one and rather compact, but eatable in itself (nuts, almonds, chestnuts), while its coating grows sometimes as hard as wood. With some this hard shell gets surrounded by the eatable part of the fruit (cherries, plums, apricots, peaches). Sometimes the coating of the ovary grows only into a pod which contains a row of seeds (like beans, or peas, or wall-flowers, or German stock, or acacia). In some the dry shell contains dozens of tiny seeds (like pansies, or poppies, or sweet-william, or larkspurs, or mignonettes). There is no end of variety in the forms which the seeds take; but whether the substance surrounding them or the seeds themselves grow eatable or not, they still represent the *fruit* of the plant, or the *result* of the combined reproductive powers of their parents, which only needs to be put into

a suitable ground to grow into their children, bearing a perfect likeness to them.

Of course you know very well that an acorn will grow into an oak, a pea into a pea-bush, a poppy-seed into a showy poppy-plant; but perhaps you have not known as yet how it is all arranged. Different details of the mutual reproductive work of plants show such an amount of care for posterity, that I should like to tell you about some of them.

There are thousands of plants the flowers of which contain male and female reproductive organs at the same time—nearly all garden flowers are arranged so,—but this does not mean at all that the pollen falls on the stigmas standing close by the anther-cells: if it were so, then the weak and small flowers would produce still smaller children from their weak seeds, and the plant would gradually wear out and lose its beauty and strength (as the posterity of an amœba wears out through prolonged fission). And, to prevent this, the anthers and

stigmas in one flower *never* ripen at the same time. One of two things happens: either the pollen has already ripened and been carried away to another flower at the time when its own stigma gets ready and opens for fertilisation; or the stigma opens first, and, when the anthers close by her side burst, it appears that the mother organs have already received some pollen from other flowers and the creative work in the interior cell has started.

What is it in the tiny bit of the pollen from the father-plant that is nothing in itself, but that gives life to the ova in the mother-plant's body? Nobody can tell. But it is so with everything that lives on earth, and we can only study how it all goes, learn and admire. So let us return to the interesting law of cross-fertilisation. This law is kept so strictly that the stigmas do not even accept the pollen from their own flowers, do not send it down to the ovaries, and in some cases they even fade and die if it drops and sticks on to them, as it happens with the rye, mignonette, and orchids.

The violets have their stamens purposely placed in such an inconvenient position that the pollen cannot possibly drop on to the neighbouring stigma. While, as for the pollen from other flowers (even from other plants of the same kind), everything is accommodated to welcome it. Here are some instances :

Have you ever seen the fine tassel of bloom on the top of the Indian corn (or maize) plant ? This is the male flower : it contains lots of pollen. The mother-flowers are growing below, clustering in rows on to strong cores and tightly covered with strong green wrappers in the shape of leaves. Out of each little female flower grows a long stigma like a silky thread : all those threads come from under the wrappers and form a kind of silk tassel on the top of each core. When the pollen is ripe it is blown with the slightest breath of the wind on to those tassels : As soon as the fine seminal dust touches the openings of the stigmas, they catch it and send it down all the way along the silky threads to the bottom of the hidden ovaries.

And there, shielded by the wrappers, at once begins the work of creating a nice and roundish yellow seed out of each ovum hidden in each little flower.

And do you know what is the reason of the sweet juice at the bottom of so many flowers? It is to attract their assistants, the insects. The bees and butterflies come and alight on the bright corollas and creep in between the petals to reach the sweet food. Thus they bring an immense amount of help to the plants which could not go on with the help of the wind alone: with their wings they shake the pollen off the anthers on to their own bodies, and when they happen to sit down next on a female flower of the same kind, the pollen is brushed off them and sticks to the fluffy openings of the stigmas. Some flowers begin to smell specially strong in the night: this is not to miss any time or opportunity, and make use of the visits of the night insects.

Some flowers are constructed so that only the bumble-bee can properly gather their pollen on to its fluffy back. Such

is the red clover. When it was first introduced in Australia, it would not grow a sufficient amount of seeds; then it was noticed that there were no bumble-bees about the fields, nor any other insect of their structure; and as soon as the latter were brought over, and their race multiplied, the reproduction of the clover improved marvellously.

This mutual help between flowers and insects is quite wonderful; for instance, there exist even nasty-smelling flowers: these are for the carrion flies. Attracted by their evil smell, they alight upon them to lay their eggs, and at the same time unconsciously carry away the pollen. The big beetles help less than other insects, but even they have a special chance: the big white flower of magnolia is arranged so that only the beetle can shake its pollen off with his hard wings, and he alone can reach the openings of the stigmas in his search for the juice.

Those flowers which can manage the reproductive work with the help of the wind alone do not need any bright

colours or any sweet juice as means of attraction. Such are all the fir-trees, the oak, the birch, the hazel-tree, the maize, the herbs, the cereals. They only grow a very large amount of pollen, as lots of it gets lost falling about anywhere and everywhere. In the fir-woods you can often see, on a fine summer day, perfect clouds of yellow flower-dust floating in the air; and, to make its journey easier, its microscopic particles have special bubbles of air in them!

The birch, the poplar, the maple bloom very early in the spring when their foliage is not yet out, and so is not in the way of their cross-fertilisation with the help of the wind. The cereals have such slender stamens that they shake with the slightest breath of the wind.

Some flowers have even something like a little machine in them: when the insect steps on the lower part of their stamen, down bends over him the upper half of the stamen and shakes the pollen out of the cells on to his back! Such are some tropical flowers.

Sometimes the pollen is carried by slugs. With some of the water-plants the male flowers float up to the female ones to accomplish the work.

Altogether, the more you study the plant life the more harmony you see in it and the more likeness to animal life in many respects.

V

The main difference in the reproductive work between plants and animals consists in the following:

The male flower lets its pollen fly in all directions; it does not know where the wind or the insect will carry it, and cannot choose the mother-flower which will grow its children. While in the animal kingdom the male joins with the female consciously, and chooses the one who will bear his children, even if he is not to see them during his life at all. And the higher the class of animals, the stronger is this personal feeling; so that the females do not always allow any male to approach them, but choose the one whom they like.

The fish alone of all the animals bears a likeness to the plants in

this respect. At a certain time of the year whole shoals of female fish go along the rivers or along the seas in search for quiet places sheltered from strong streams, which would seem to them cosy enough to make a "home." But that home is very different from the homes of most animals. The female fishes do nothing but let out from their bodies thousands of little ova: you must have seen them in some fish at your meals—it is the roe, or the spawn. All that mass of eggs, or ova, comes from the ovaries inside the mother-fish, where it is produced, and goes along special canals called oviducts, which open into the lower end of the bowels (the rectum). Coming out through its opening, the eggs settle in masses on the chosen spot at the bottom of the sea. And there is the end of the mother's work with the fish; she has even less to do than the mother-plant has, as the child of the latter stays and grows in the snug cell of its mother's body, while the mother-fish parts with her tiny eggs for ever as soon as she has

laid them. She has only to produce as many ova as possible, because lots of them get lost when they are out; many fish of other kinds would eat them.

These ova have no chance to grow and develop by themselves, as they are laid without being fertilised. But after the shoals of the female fish, there come along shoals of male fish of the same kind; and where they see the masses of spawn they stop and cover it with so-called milt. This is a thick fluid which is produced in special glands (testicles) of the male fish, and contains thousands of microscopic particles which —like the pollen of the plants—is the origin of life for the next generation. This seminal fluid comes from the testicles also, down to the lower opening of the rectum; and when these thousands of living seeds fall on the thousands of little ova waiting for them in the water, the same thing happens as with everything that lives in this world: the powers of the father's and mother's nature join together, and every ovum receives the first touch of life;

a young being is engendered in it, it begins to grow, and gradually develops into a little fish which—although not yet quite like its parents—comes out of its cell to live its own independent life.

The male fish does not personally know the one whose ova he has fertilised; but in some cases he shows quite fatherly feelings: he does not go away, but stops and swims above the mass of fertilised spawn to take care of it the whole time till the youngsters come out into the world. So does, for instance, the stickle-back. But he is on the watch only against other greedy fishes, because, as a matter of fact, the fertilised spawn does not need any care, and develops itself quietly lying in water. Thus, when the young ones come out they do not know their parents; and should the whole family meet by chance, they would not recognise each other, and there would be no sign of joyful feelings.

VI

Besides the organs of reproduction the fish have, of course, many other organs between which the "work of life" is distributed: organs of respiration, digestion, sight, hearing; they have the nervous system, the muscular system, the blood circulation, the intestinal system, and some others. But all these parts of a "living machine" (allowing for some varieties) we find as well among a great number of animals, although some of them look smaller and simpler than the fish: all kinds of snails and slugs, worms, caterpillars; pretty butterflies and dragon-flies; hated fleas, beetles, gnats, and moths; energetic bees and ants and clumsy lobsters, tortoises, and crocodiles; hairy spiders and slimy lizards and serpents.

All these numerous groups and

species, insects, reptiles, or mollusca, are by no means simpler than the fish in construction; while in the work of reproduction they are much higher. With all of them the male and female choose each other, and this *personal feeling* forms already a step towards the higher animals who live in families.

With this addition of the personal feeling the reproductive or sexual system of the reptiles and insects is also more complicated than that of the fish. The ova produced in the ovaries of the female animals in most cases cannot be fertilised otherwise than in the mother's body itself. Therefore the seminal fluid of the male, on leaving his testicles (where it is produced), does not pass to the opening of his bowels, but enters his special sexual organ, a small exterior canal called the penis. When a father-lizard or a father-butterfly touches with his penis the opening of the rectum (or, sometimes, there is a special sexual opening too) of a she-lizard or a she-butterfly, his semen passes through this exterior organ into her oviducts and

fertilises the ova. There are varieties in the arrangement of the sexual organs, but the general law is, that the female of the insects, or reptiles, or mollusca will not start "laying eggs" until they have been fertilised inside her body by the male. They can be called "eggs," generally speaking, although they are very different in appearance; and you would make no mistake in distinguishing the eggs of a moth from those of a crocodile or a lobster.

When mothers in this vast kingdom (from the fish to the birds) bring their little ones into the world, not only are these latter not yet ready in their cells, but when they do get ready and crawl out into the open air, or marshes, or water, in most cases they have to go through different stages (larvæ, pupæ, tadpoles, etc.) before they finally turn into the same shape as their parents. This time comes in due course, but then they have long ago been abandoned by their father and mother, who instinctively know that their children will be independent enough as soon as they

are out of the eggs. In most cases the eggs are left alone directly after they are fertilised and laid; and if they are warmed or watched by some of the parents, it is only till the time when the queer-looking youngsters have to crawl out into the world.

Whole years of study and whole rows of books are needed to learn all their ways properly. There is no end of detail and variety in the kingdom of those creatures, which are often plain-looking, often mute, often "disgusting" to the human eye; but I can tell you of a few cases which will, perhaps, increase a little your respect towards them.

For instance, you would hardly imagine that some of the slimy and melancholy snails would take care of their eggs; but they actually do it: they sit and watch till they instinctively feel that their "babes" have grown alive in their cells and will soon go out of them.

Some crayfish and crabs carry about the eggs of their females which they have fertilised. They catch them, after

they are laid, by special feelers fastened under their tails, and swim about with them as long as necessary.

The star-fish (which does not even look like an animal, and can multiply also through plain division) gathers her fertilised eggs into the hollow place of her body, just in the centre of the star, and keeps them there till her instinct tells her that she can safely leave them alone.

The frogs and toads fertilise their eggs not inside the females' organs, but outside, when they are already laid, as the fish do. But with the latter the male fish will fertilise the ova of any female of his kind, even if she has swum away and he has never seen her; while the male frog embraces the one whom he wants to be the mother of his children, squeezes her gently with his paws, and then she lets out the ova which he covers with his seminal fluid on the spot. The frogs and toads have no special openings for the semen and ova: all secretions of the reproductive organs come to the same opening from which the excre-

ments from the bowels and kidneys are cast out. But this does not prevent them from showing great tenderness for their eggs. With some frogs who have got them stuck together in the shape of long cords, the father, after having fertilised them, wraps them round his hind legs, and sits motionless in a moist place buried in the soil up to his neck for several days; then he crawls out and drags them into a pool or pond where he lays them carefully on the bottom. There they need no care any more, and he considers himself free for the pleasures of his life.

One big toad has little holes in her back. When she is laying eggs the father picks them up one by one with his paws and places them in those holes, where they are grown over with a thin skin, and remain until the youngsters are ready to crawl out.

We often feel disgusted at the sight of wet and slimy creatures, who live in swamps and pools, and call them "nasty" and "horrid." But I think there is something in them which can be even

admired, although they do not live in regular families. This care for their children is quite enough to teach us not to despise them.

But still, among all these classes of animals we have mentioned till now, the male and female part as soon as the eggs are fertilised and laid—or, at any rate, as soon as they are hatched. So, after all, there isn't one child born in that kingdom which would know its father or mother. They are all independent, but all "orphans" from the very first hour of their life.

VII

THERE are, however, two prominent kinds of insects amongst which the nursing of the young generation reaches the higher degree of wise carefulness: these are the bees and the ants. You are sure to have heard many things about them, but we cannot pass them here without mentioning their "home life," and you may happen to hear something new.

In every bee-hive there is one queen, which is the biggest and strongest of all. She lives from four to five years, while the ordinary bee's life lasts only six or seven weeks. During the whole course of her life the queen leaves the bee-hive only once, in the prime of her youth, on a bright summer day, in company with the numerous inhabitants of her home. There are about twenty

thousand working bees (females) and about two hundred or three hundred drones (males). These drones cannot work at all, they do nothing: the workers allow them to feed on the gathered honey during the summer, and, when the autumn comes and food gets scarce, drive them away to perish with hunger, or they even kill them. But still the drones are fed so long and there exist so many of them, because several queens are born in the hive every year. When a young queen flies out into the open air, a very important thing for the whole bee-hive takes place: she chooses one drone amongst the lot and allows him to fertilise her. Like other insects, the drone lets the seminal fluid out from his testicles, it passes along its ducts and enters through his exterior reproductive organ into the sexual opening (or vagina) of the queen. This is done in their flight in a few seconds; but the power of this semen is so concentrated that it lasts the queen for the whole of her life. She keeps it in a special interior cell by the side of

her oviducts, and uses it gradually as she thinks it necessary. As the ova come one by one out of her ovaries and pass down along the duct, she either lets a particle of the semen out of the cell to fertilise them, or she does not. If she does, the fertilised ovum will grow into a worker, and if she does not, it will come to be a drone. This wonderful arrangement of the queen's organs is very important for the social life of the whole hive: its inhabitants themselves watch the formation of their society, and the queen produces as many workers or as many drones as necessary. The fertilised young queen at once flies with a part of the old society of workers into a new hive to form her own kingdom. This she starts at once: begins to lay eggs, and continues this work for the rest of her life with extraordinary vigour; she never stops, and the number of eggs laid by her in the course of one day reaches sometimes up to three thousand five hundred.

She lays them in separate wax-cells

prepared by the workers. In about three days' time little grubs come out of the eggs; they have neither legs nor eyes, but they have a mouth, and the workers begin at once to feed them from their own mouths. After a meal lasting for five or six days the grubs grow considerably bigger, and then the workers seal them up with wax in the same cells. There each of them gradually turns into a proper bee, which breaks her cell and flies out into the busy world.

If the queen of the hive is getting old and weak, then the workers select a few specially nice female-grubs and begin to feed them with particular care to rear queens of them.

Thus all the inhabitants of a hive, males and females, are brought up by the elder workers; and each queen has in her life lots of children who replace each other, as they live only about four weeks. She would have nearly millions of them if they did not perish from other insects, birds, cold winds, and all kinds of casual hardships and foes.

The drones—and even the one who gave them their life by means of the queen—are not respected at all, and take no part in the social life of the hive; they are only graciously allowed to live and feed through the summer, and then are driven out or even executed. So the bee-association can be rightly called a "feminine kingdom," as it is ruled and arranged by one mother and several thousand daughters.

Some of the latter also lay eggs, but only drones come out of them, as these female bees produce them without having been fertilised by the males. (Such a phenomenon can also be met with among some of the lower animals, insects or mollusca, but very seldom.)

The social life of the ants is still more complicated. They have several queens in one ant-nest, several males to take part in the reproductive work, and hundreds of workmen and "soldiers" and "feeders" and "farmers" and "mechanics." You can learn lots of most interesting things about their cleverness in special books; and here I

only want to tell you how they nurse their eggs. As soon as the latter have been laid by the queens (all in one heap, not like the bees), the busy nurses at once begin to sort them out, lick them properly, and distribute them about all the different cells of their dwelling. But they don't leave them there for a long time, but rush about with them constantly, changing their places according to the temperature and safety. Then they do the same with the larvæ, feed them, and actually nurse them, watch the cocoons, and at last tear the silky coatings and drag the ripe little ants out when ready to join their company. But all that care and cleverness (just as with the bees) is used by them specially for the benefit of their association. You see in them perfect *social* workers who have no feeling of personal tenderness and care: it does not concern their own children, but is spread abroad on everything that helps their social prosperity. It is wise, it is generous, but this lack of personal feelings is quite strange to our human

heart. It seems, somehow, somewhat more natural to us when some plain little snail or frog watches her *own* eggs, or the crayfish carries them about, saving them from all dangers, although their mates have left them long ago.

But where, then, is the real family and home?

To find one we must pass by the clever associations of bees and ants and make one more step up the staircase of animal life!

VIII

Snug and warm are the little eggs under the mother swallow's body in their nest under the roof. Hungry but confident feel the little birds when, with their beaks wide open, they see now mother, now father, flying towards them and carrying food.

The shy and modest mother-nightingale is thin and run down, exhausted with fatigue sitting on her eggs. But if you noiselessly peep at her nest through the shrubs, you will see that the father comes home, sings to her, and then takes her place, giving her a chance to stretch her tired limbs and find something to eat while he keeps their children's cells warm with his own body.

And have you ever seen the stork in his big nest? He talks to his wife and children in a manner which seems nearly

understandable to us! He lives with his wife without ever parting from her till the end of his life, and lovingly brings up with her a new brood of youngsters every year.

The pigeon, the swan, some kinds of parrots, and the Australian guinea-fowl lead the same real family life, full of life-long devotion and care. Other wild birds mostly form a new family every year: that is to say, the males and females join in different couples each year; but once a couple have grown friendly and decided to make their home, they at once start to build it together and never part till it is ready, the eggs are laid, the little ones hatched, brought up, and taught to fly and be independent. There is always the same amount of love for them, and the father and mother will never be untrue to each other, and will never join with other birds till their children are grown up and ready to start their own families.

It is only the farm birds that have been gradually spoiled by man. You have seen what a pretty picture the

duck makes leading her fluffy youngsters to the pond or river; or the hen, with the feathers still thin on her chest with sitting on the eggs, in a most excited state sheltering her children with her wings spread as wide as she can against a foe. But those children do not have their "own" father. Man—partly because of the fighting nature of the cocks and drakes, and partly because of using them for food and sparing the she-birds for the purpose of laying eggs—usually leaves just one or two cocks and drakes in his poultry yard: and these do the fertilising of all their females, which leads to the result that the males have their children born by different mothers, while the hens and ducks, in their turn, have children from different fathers. It is the same with geese and turkeys. Among the wild birds there is only the cuckoo, who does not even build a home, and prefers to lay her eggs in the nests of other birds to get rid of the troubles; but then, everyone feels a kind of contempt towards the cuckoo, while the homely stork, or pigeon, or even

sparrow, calls forth our sympathy and respect.

The organs of reproduction with the birds are the same as with many other animals of which we have spoken already: the male has the seminal glands (testicles), the ducts leading out from them, and the exterior reproductive organ (penis) through which the seminal fluid is introduced into the organs of the female. The female has the ovaries which produce one by one the eggs, and the oviducts where the eggs meet with the semen, and only then are grown over with a hard shell to come out into the air through the lower end of the bowels, or rectum; thus the excrements from the bowels, as well as the urine from the kidneys (which is the useless remnant of the blood), and the eggs all come down to the same opening, which also serves the female bird for the introduction of the semen, as she has no separate sexual opening. The same construction of reproductive organs exists with many lower animals: very often the male lets his seminal fluid out

also through his rectum, as he has got no separate exterior organ for it. Such arrangements have the fish, the frogs, many worms, many molluscæ, and spiders. In this respect the birds can be compared just with these animals, but not with the insects, who have special ducts and openings for the semen and ova.

IX

As long as the new young being is not yet ready when it comes out of its mother's body, and is shielded by a hard shell or by the elastic coating of the spawn, our feelings of tenderness and tidiness are not shocked with the fact that it has to come along the same way with the excrements of the body: it will all the same remain clean and untouched in its own cell.

But, coming over to the mammals, we find the arrangement more complicated and our feelings are spared at the same time.

The mammals, on the whole, are endowed with more sense than the lower animals: consequently they can take more care of their children; and, since it is so, the children can be born more helpless than the insects and fish

and reptiles, which come out of the eggs quite independent. And there the shielding shell is abolished. All mammals, as well as human beings, are not born in the shape of an embryo enclosed in a safe shell, and they do not stay in anything like a shell after having come out of the mother's body: but they are born living little creatures already like their parents, but thoroughly helpless, tender, open to cold and pain, and needing utmost care and love from the first moment of their appearance and for quite a long time.

There is so little difference in this respect between the mammals and the human race that we may as well talk now of ourselves. Some interesting details about the animals I will tell you by the way.

Each of us has been once upon a time a tiny, almost invisible, ovum in our mother's body. This ovum—like many others before and after it—has been produced in the ovary-glands, deep inside her body. Many of these ova do not come to life, although they are pro-

duced every lunar month (which means not the ordinary thirty-days' month, but the twenty-eight days' month, in the course of which the moon returns to the same position where it was for us twenty-eight days before). Coming out from the ovaries, the ova pass through an enlarged part of the ducts which is like a little pouch or cell (called the uterus or the womb). Without having been fertilised, they come lower down and out of the lower end of the sexual canal (the vagina) through its own opening, which is in a safe place of the woman's body, between the opening of the urinary system and the opening of the rectum, covered with a fold of the skin. The unfertilised ova are accompanied by a certain quantity of blood which comes from the inner surface of the womb: this process brings some pain and weakness with it. It begins with some girls rather early, at the age of thirteen to fifteen, and therefore needs much attention in the way of cleanliness and normal quiet, so as not to disturb the development of the important inner

powers of the woman's organism. Not only physical exhaustion, but any shock to the feelings as well may easily cause an abnormal loss of strength and blood.

But now a girl grows up into a healthy being, ready to accomplish the serious task of her nature. The man who loves her and marries her, thinks that she is ready not only physically, but in her soul and mind as well, to fulfil with him the serious work of bringing up their children. And then he feels an ardent desire—physical and moral—to unite with her and join his generative powers with the maternal powers of her nature. Here we see the animal instinct of reproduction made more beautiful and spiritual by the human *consciousness* of love and friendship. Loving his wife and loving beforehand his children, the man lets out into her body several drops of his seminal fluid. If he is strong and healthy, pure both in thought and body, this seminal fluid contains microscopic living seeds. These seeds (or spermatozoa) are minute bodies con-

sisting of a flattened "head" ($\frac{1}{10,000}$ of an inch wide) with a mobile, threadlike "tail" ($\frac{1}{5000}$ of an inch long). A healthy man's spermatozoa are strong and quick: as soon as they get on to their own road in the woman's body they move up quickly and find their way into the cell, or womb, into which the vagina leads. The semen flows out of the external reproductive organ of the man which he introduces for the purpose into that special opening of his wife's body. It flows out separate from the urine, and comes along separate ducts leading from the testicles and joining the urinary canal only at the end. The testicles are safely enclosed under several coatings in the small pouch (or scrotum) which is suspended right at the bottom of the abdomen, behind the reproductive organ. Thus, as you can see, the human system of reproduction (unlike that of many lower animals) is isolated from contact with excretions; and it comforts us to know that the birth of a human being is carefully adjusted to special organs.

Once in the interior of the mother's organs, the semen may meet an ovum on its way down. If it does *not* (in the case of the ovum having passed out already or having not yet left the ovaries), then all the minute seeds perish; but if one of them *does*, then the same thing happens as with every living being: the outlet from the womb into the vagina is closed, the two united microscopic particles stay inside, and there begins to grow from them the man's and the woman's own child.

It needs a long time, quite nine months, to transform an ovum of $\frac{1}{200}$ of an inch into a living baby! . . . Mother knows that it is being engendered in her; first of all, because her monthly ailment stops, as the womb is closed, and the ovaries have stopped producing ova. One of them has been fertilised—the aim reached—and the work begun. Besides, she begins to feel somewhat strange, indisposed, sometimes sick. But gradually this ailment passes off, and only the feeling of weight inside her is increasing.

When the baby is about half-ready, over four months, the mother suddenly begins to feel now and then a slight and faint knocking and pushing inside her. This is an extremely nice sensation! Now it knocks her gently with its tiny arm or leg, now pushes with its head, now stretches a little or moves round as if making itself comfortable. . . . The mother feels as if it was talking to her: "I am here! Do you feel me, mother?" And her joy is great, and she can't help answering tenderly: "Yes, darling, I feel you. . . . We are waiting for you. But grow a little more and I will take care of you."

And so she does: firstly, she does it consciously, taking care of her body, in which a most important work is going on. She moves and walks in the open air, tries not to hurt the baby, does not wear any tight clothing, takes nourishing and light food, and does not drink anything or do anything that might excite her. All this is necessary because the second—unconscious—part of her work, which is going on inside her, depends a

great deal on her own health and happiness.

The embryo represents at the beginning a tiny, shapeless lump; then its exterior and interior organs gradually appear and develop, the male or female sexual system gets properly formed, the face and limbs and even nails and hair appear. The baby begins to stir, and gradually grows up to its proper size. But it can neither eat by means of its mouth nor breathe with its lungs; and here the unconscious work of its mother's nature helps it: the nourishment and breathing both are done for it through her body. Inside the cell in which it lives a special coating (or membrane) is formed of the inner layer of the womb. It is next to the baby, and makes a sort of a cover for it: it is called the placenta. This placenta is tightly interlaced with the blood-vessels of the mother, as it is beset with outgrowths protruding into the inner surface of the womb. This interlacement is practically filled with fine blood-vessels, and thus the placenta forms a soft cover soaked with the pure

blood from the mother's body. Wrapped up and curled up lies the baby underneath.

Now from this soft coating grows a cord which is attached at the other end to the centre of the baby's abdomen—the umbilical cord; along it blood-vessels run, and through them the whole work of nourishing and breathing proceeds: particles of mother's blood pass along them and bring nourishing matters and all that is necessary for the growth of the little being. Some of the other vessels in the umbilical cord at the same time carry back the particles which have been left useless, and thus the baby gets from his mother the sources of *life*.

The baby grows, and with it grow its coatings, and the womb itself stretches. When empty the womb is not bigger than a small oblong pear, its inner sides nearly touching each other. But towards the end of the ninth month the baby grows to a length of about one foot, its head somewhat large for its body, and weight from eight to ten pounds. Then the womb is stretched a

great deal and the other interior organs of the mother are lifted by it; her abdomen rises so that one can easily notice her state.

While the baby is being formed its nature receives many qualities which have come to it with its father's seed and its mother's ovum. Their child gradually grows like them morally and physically, even before being born and before this can become noticeable. It often acquires the same features, the same shape of limbs and figure, even of ears and nails; the state of its parents' health often affects the yet unborn but living creature; it gets their strength, their illnesses, their talents, their character, even their habits—which all becomes evident when it is born and begins to grow in the outer world.

Therefore, he who wants to have strong and bright children must develop his own strength and bright nature; but if you allow yourselves to be lazy and peevish from your childhood, you have no right to expect your children to be bright and energetic; if you give way

to cruelty and falsehood, they can have no inborn kindness and honesty.

By the end of the ninth month the baby is ready. Then the muscles of the womb, which has been so long his home, begin to contract and to push the little one out. The mother suffers attacks of pain and goes to bed. The lower end of the womb opens, the vagina stretches itself wide—up to the necessary size—and the baby appears at last! All that is very painful, and the mother suffers several hours, sometimes a whole day and night. But when her own child takes the first gulp of air and gives the first squeal asking for food and help, great joy rushes to her heart in such an overwhelming wave that all her suffering is forgotten in a minute, as if it had never been.

The baby drags after itself the umbilical cord with the placenta at the other end of it, which has already accomplished its purpose and is wanted no more. As soon as it appears the doctor ties the cord very tightly at the very abdomen of the baby, and cuts the rest

off. The little wound is bandaged, and only a trace remains after it; you all have seen it in your body. This is a very light operation, as the baby's lungs are already filled with air, and it breathes independently. With the mammals the mother does it instinctively: she bites the umbilical cord off from every young one, as each of them usually has a placenta of its own, even if there are several of them. Several embryos can be engendered when several spermatozoa fertilise several ova, as happens with many mammals.

When the minute blood-vessels interlacing the placenta with the womb break, a great deal of blood is poured out of them and down the canal. The inside of the womb is considerably hurt, and bleeds several days till it has healed and contracted to its normal size. All this time the mother is very weak and must quietly lie in bed at least for nine or ten days. But when the baby is bathed, put into soft garments, and laid down for the first time to mother's breast, her happiness is deep and end-

less. These moments remain for ever in parents' memories. . . . Grown up, independent, happy, they silently watch this new being, with its eyes half-closed and its tiny fingers stirring instinctively in the air, sucking the milk specially prepared for it in mother's breast. . . . It puffs, smacks, and falls asleep sweetly and soundly. Strange is it to them to feel that this is a part of their own selves, and extremely sweet is that feeling, and at the same time they can hardly believe that there has been a time when that child had not yet been with them! . . . And new thoughts flash through their minds as to how they will succeed in bringing him up and making him happy.

Corresponding with all the reproductive work the mammary glands in the mother's breast swell gradually, and the milk is ready just by the time when the baby is born. But when its teeth one by one cut through the gums and there are enough of them (sixteen) towards the end of his first year of life, the milk gradually is reduced in quantity and disappears.

Sometimes the mother is very weak or suffers with some kind of illness, and therefore cannot feed the baby with her own milk: then it has to be fed on cow's or goat's milk. Very often, though, another woman is found, who herself had a baby born exactly at the same time; she is hired for money and asked to give her breast to the other baby instead of her own. But, in the first place, it is not good to take a woman away from her own child (although many people have persuaded themselves and others that there is no harm in it, so many poor wet-nurses can be found for money!), and, secondly, many nice mothers will never let their child have another woman's milk: her illnesses, and her character are often imparted with the milk, and one never could be quite sure about another woman's health and character. Besides, the goat's milk is very like the human one in composition, and there is never any harm done by it if the animal is healthy and well looked after. Above all, mother's milk is certainly best, especially if she is

strong and bright and takes care of herself. All around her—her husband and her elder children—must also take special care of her during that year; the more so as it is not a very easy thing for the mother: the baby has to be fed not only every two or three hours in the course of the day, but she has to get up also in the night, once or twice, as the little ones cannot very well stay without food from evening till morning.

All mammals feed their young ones themselves, even the whale (notwithstanding its likeness to a huge fish), as it has its children born alive, like all mammals, and the female has got mammary glands to produce milk.

Different animals need different periods of time for their embryo to develop in the mother's body: the mouse needs only three weeks; the hare, five weeks; the hedgehog, seven weeks; the dog, nine weeks; the lion, three and a half months; the deer, nine months; the cow, ten months; the

camel, thirteen months; the elephant, two years.

And not a single one of the animals remains helpless as long as Man does; they grow much quicker and can have children much sooner than man and woman can. For instance, the cow, at the age of three years; the cat, two; the sheep, two; the dog, the pig, three; the cray-fish, four; the farm-birds, six months to a year.

But this is so because the animals are far below Man; the reproductive work is the only work that is entrusted to them, while Man is endowed much more, and the development of *all* his capacities, of *all* his mental power, needs more than twenty-five years; therefore, naturally, his reproductive system also develops much later than that of the animals. Men and women are gifted with the conscious feeling of love, and they must not choose each other before they seriously desire to form a family and bring up their children. *Such a conscious union needs perfect development of all capacities*, while a rapid

growth of the reproductive system alone would be not only useless, but even harmful, because a lack of mental power with such unbalanced people would make it quite impossible for them to bring up their children properly.

X

WHEN you begin to notice some changes on your body which make you look, to a certain degree, like grown-up people, it does not mean that you are fully developed. When a young girl begins to have her monthly ailment, it does not mean that she could safely give birth to a child, being herself about thirteen to fifteen, to say nothing of the fact that she would not know at all how to educate it. Such early marriages often happened in the olden times (and still happen among some Southern nations), but it quite exhausts the poor "baby-mother"; she wastes all her strength, is weak for the rest of her life, and grows old much too soon.

Nature, probably, gives the young girl such an early incomplete development because, at the same time, her

whole body is being adjusted, her hip-bones widen to make room for the child which will grow between them one day, and her milk-glands gradually appear and grow. All that needs time; and so nature gets the future mother ready physically, while, at the same time, her mind and soul widen and deepen for the great purpose of her life, because being a *healthy, good, and wise mother means rendering humanity great service through giving it bright and strong workers for the next generation.* When all mothers are healthy and wise, the human race will improve for the weal of all, and each generation will bring with it more brightness and more strength into the world. Each girl who wants to be such a mother in future takes care of her strength. But this does not mean lying about on sofas and cushions: on the contrary, it means working with brains and muscles for the greater part of the day, learning, gardening, housekeeping, nursing the younger ones; she will find plenty to do if she only cares to. After this, walks

and games in the open air, music, drawing, any simple fun and amusement, everything of that kind will be an enjoyable rest for her. Besides, every girl must pay great attention to the cleanliness of her body, harden it with cold water, and never irritate her sexual organs through touching them. The unnecessary touching (which means any touching besides the proper washing with cold water) causes an irritation which leads to a few moments of agreeable physical excitement, but ends with a nervous attack which is very dangerous. The reason is that in the reproductive organs there are many so-called "nervous centres" which are in connection with all parts of the organism; and, leading those nerves to fits of sexual excitement means ruining health altogether. The girl involuntarily shows strange tastes and habits which are always a clear indication of her base yearnings. Her inner system weakens, her complexion becomes sallow; she begins to suffer with anæmia and palpitation; and, by the time when she has to bear and

nourish her own child, her being is already exhausted and the innocent baby is born too soon, of incomplete stature, and dead, bringing with it the same physical suffering, but no joy.

Only with strict care and a constantly occupied mind can she grow into a *real* woman, deserving love and respect, and worthy to become a mother. No sensible young girl will waste her thoughts upon costumes, tight lacing, pointed shoes, ornaments, powder, elaborate hairdressing, etc. While a girl who is interested solely in such-like trifles and silly amusements, and who does not take strict care of her body, will bear in marriage not strong and happy children, but sickly, peevish, and stupid offspring, the education of whom will be nothing but a torment.

XI

In the same way nature treats the boys. If a young boy of about twelve to fourteen begins to notice some changes on his body and to experience a feeling of irritation in his sexual organ, this does not mean at all that he is "like a man." Only an unhealthy influence can provoke such a feeling at that age; and every boy who remembers that the life and health of his future children depend on the state of his reproductive system, will of course spare himself from anything unhealthy. The exciting physical sensation comes in most cases from the following causes: tight knickers, pressure from outside, as when sliding down the banisters or even riding; from keeping back the urine, from hot bedding, and, chiefly, from uncleanliness. When the dirt, gathering under the extremity

of the skin, excites an itching sensation, the boy who does not know of the danger often will begin to rub the organ; this increases the irritation, causes a few minutes of agreeable physical excitement and often ends with a nervous attack which is accompanied with a few drops of fluid bursting from the seminal ducts. But this fluid does not contain any semen as yet, and this act is not in the least "manly," but dangerous and degrading. The feeling of irritation, if it comes *by itself*, is only a false alarm, a signal about the preliminary interior work of the boy's organs which is going to make of him in future a strong and healthy father of a new family. And if the boy, instead of resisting these sensations of the sexual nerves, gives way to them and does anything to lead himself to fits of sexual excitement, this will grow into a habit which is called self-pollution and leads to very bad results. The reason is, that in the reproductive organs there are many nervous "centres" which are in connection with all parts of the organism; and irritating and ex-

hausting them leads to a shock to the whole body: the eyes get affected; the spine begins to ache; the memory and muscles weaken; the complexion becomes sallow, the look haggard; the working capacities disappear; the boy begins to be unsociable, queer, cannot meet other people's eyes, and tries to remain alone to commit this "solitary vice."

The boy who has indulged himself in self-pollution spoils the reproductive power of his sexual glands, and, by the time when he wants to have his own family, he may not be able to have any children, or they may come to be morally and physically deformed.

You see how much every new generation depends on whether the one before was pure in mind and body. And just think of the *wrong* which is done in each case when a depraved and exhausted fellow marries a pure and healthy girl, or the opposite way: it often happens then that the innocent father or the innocent mother is deprived of the joy of having nice children through the

other's fault, because a healthy mother is often unable, in spite of her health, to give full vigour to a weak semen, and an exhausted woman will spoil the growth of a strong one.

XII

Now it is plain to you that not only can parents be grieved on noticing the symptoms of the solitary vice in their children, but the latter themselves, when grown up, will feel very sadly the dishonourable state to which they have brought themselves. It is difficult to get rid of that habit, but it is possible, with the help of *will, frankness, and cold water.*

The most important thing that must be understood by each of us is, that the sexual organs are given us not for amusement, but for the important task of continuing our race which binds us into families and helps us to be kinder to one another. Nature endowed us with Reason and Will to make us superior to the animals; and this conscious and spiritual part of Man helps

him so much the more to keep himself high and human in the unconscious instinct which is the same for all beings.

There are many children who amuse themselves with their sexual organs only because they *do not know* of their importance. They are not to blame, because the fault is either their parents', who omitted to warn them in time, or their comrades', who have already spoiled their own poor young bodies and lure other children into the same base occupation.

The whole question of our birth is so dear and private to the parents and their children, that it would not be right for you to start conversations about it with your comrades: they all have *their own* parents and grown-up friends for that. But, if you ever hear senseless, dirty jokes from other children, and see that they do not understand their own peril, then advise them to go and ask their parents about it. You will notice that this is no longer easy for them, because they already feel ashamed of themselves, while a pure

and noble mind will ask about anything without shame or fear.

Should silly comrades only sneer at you, do not waste your honest reasoning, as you will not succeed in persuading them. And you will notice how they will try to hide their habits, and pretend before those whom they love and respect.

But one must not mix up the two things: touching the reproductive organs for amusement or for cleanliness. A cold wash is necessary every day. By the way, a few words about the custom of circumcision, of which you are sure to have heard from Hebrew history. This custom has been established for cleanliness' sake: they cut off the very edge of the thin skin which covers the boy's reproductive organ; this operation is not dangerous, but prevents the gathering of dirt under the skin, as the end of the organ remains after that uncovered. But the Hebrews, whom Moses ordered to circumcise every boy on the eighth day after his birth, were at that time in a desert, where water

was very scarce and often would not last them even for drinking; and there was not much mental or muscular work either, while we live in entirely different conditions. Our boys must only remember and willingly do the following: take a cold bath every day and wash in it their sexual organs quickly and cleanly; sleep with open windows; use no hot bedding; never stop in bed when awake; never keep back the urine; be moderate in food; never take intoxicating drink.

In general, all young people must take this part of life seriously and worthily, then there will be no danger of ruining one's own health and one's own future family. If a healthy and pure-minded young fellow sometimes feels sexual irritation, it will be only in his sleep, when the body is not occupied with conscious work; and then several drops of seminal fluid will escape. If the boy is healthy and strong, there will already be living semen in this fluid. It will, of course, perish unused, till he gets married—but there is no harm in that: with a grown-up married

man much of his semen also gets lost, because not all the spermatozoa find their way into the womb at proper times—actually not more of them in the course of man's life than he has got children. It sometimes happens that two spermatozoa will fertilise two ova, and it is then (as it is supposed) that twins are born.

When a man restrains and controls his reproductive power, it does not grow superfluous; it is always in store, strong and healthy, till the moment when he and his wife feel that they want to have another child; and then all his love and all the concentrated capacities of his nature pass to her with it.

It often happens that a husband and wife join several times in the course of a month, or even of a week, and yet they have no children. Sometimes it comes from unknown reasons, and sometimes just because the man does not give time enough to his reproductive system to grow in strength. Such frequent sexual union is not good, merely from the fact that it tires the woman, is

not always pleasant to her, and she may grow weak just at the time when a child begins to grow in her. This kind of fatigue is often the reason why a woman's inner organs cannot keep and nourish the baby long enough, and then it is born before its time, incomplete in form, dead, bringing nothing with it but grief and illness.

The production of seminal fluid is very much like the production of tears; that is to say, the seminal glands and the tear-glands work in a similar way: man has always got tears, but they are in store till necessary. And if you do not cry for a long time, it does not mean that your tear-glands are overfilled and that this does harm to you: however many years you might live, the glands will be all right all the time, and the tears will appear at the first occasion when wanted.

There are even men who never marry, for some reason or other, or remain widowers after the death of their wife, and live so to the end of their days, pure and elevated, keeping back the desire for sexual union. Of course it needs

an enormous will, a great mind, hard work, and strict physical training to drown the instinct of reproduction. But still, there *are* such men, and it *is* possible to live so, and be happy with spiritual happiness obtained through some great work.

What is necessary, is to *understand*, to *feel*. Everyone of us must understand in his young soul that man and woman may join only when they know and respect each other deeply; if they want to have children and mean to put all their mind and heart into their education.

Till then, take care of all things impure that may trouble your mind; go to those elder people you love, and speak of everything without false shame or fear. Spare your young body for the time when its vigour and freshness will be wanted to create your own bright family! And then you will be able to fulfil the purpose of your physical nature as Man and Woman—*who are endowed with conscious human feelings*, as well as with the animal instinct, which is the same for all that lives in this world.

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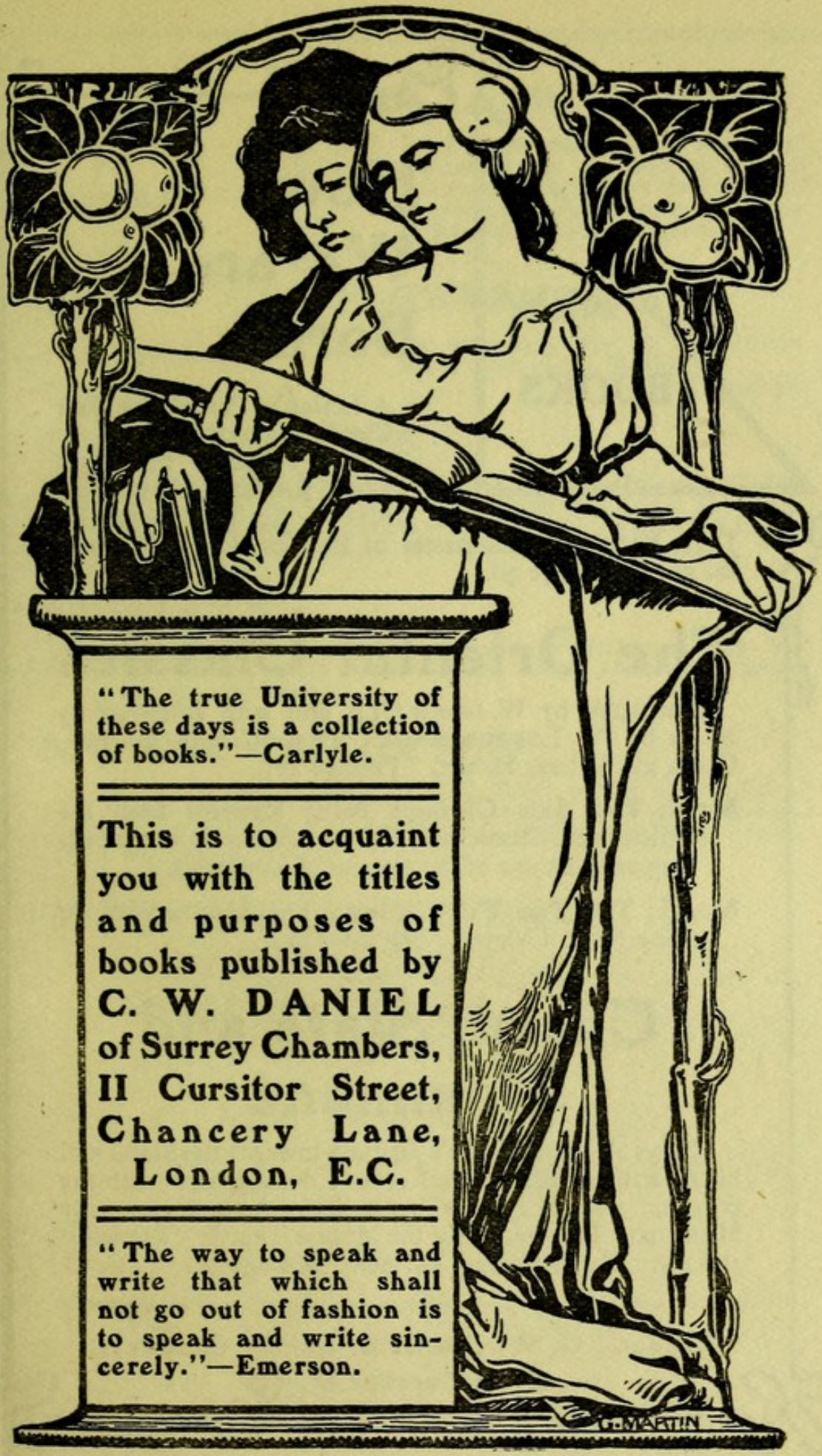

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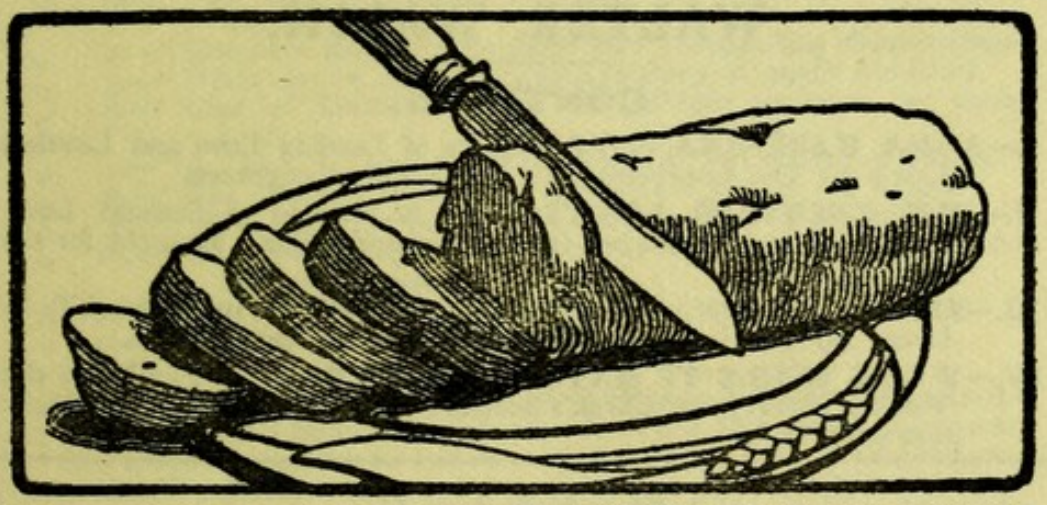

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