

# SELF

## A Study in Ethics and Endocrinology

BY

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LONDON

WILLIAM HEINEMANN • MEDICAL BOOKS • LTD

1946

FIRST PUBLISHED 1946

THIS BOOK IS PRODUCED IN COMPLETE  
CONFORMITY WITH THE AUTHORISED  
ECONOMY STANDARDS

PRINTED IN GREAT BRITAIN AT THE WINDMILL PRESS  
KINGSWOOD, SURREY

## FOREWORD

THOUGH the subject of this book has preoccupied countless men and women—in some fashion, perhaps, all who have ever lived—only a minority have put their reflections on record. The question “Who am I?” is addressed to each human being; and the answer each gives is an index of his maturity. It is of course fundamentally a religious question; but it is not only “religious” people who feel the necessity to give some sort of an answer. Anthropology—in its original meaning—has in our generation begun to win back its proper place among the sciences, though psychology might claim with justice to have opened the door for this return.

Mr. Dillon’s book is a contribution towards the full answer to the ultimate question of Man’s nature and destiny. I am glad to commend it, not because I agree with all that it contains, but because I know the author and have a deep admiration for him. I think there is more in the *philosophia perennis* which illuminates his theme than very likely he would allow; and because I think so the argument seems to me here and there defective. Yet, as Mr. Dillon more than once remarks, he is concerned with psycho-physical mechanisms and reactions about which, for the present at least, any conclusions must be tentative. There is a stage in every enquiry at which it is more important to ask the right questions than to be sure of the answers. I think Mr. Dillon asks a number of very searching questions, and in his attempt to answer them displays an unusually honest, lively, bold and original mind.

GILBERT RUSSELL,  
M.B.,Ch.B.

## CHAPTER I

### INTRODUCTION

DURING the last few years there has been an increased output of scientific books written for popular consumption. To choose but a few titles at random there are: *Readable Relativity*, *The Story of the Heavens*, *Science in the Making*, *The Story of the Brain*, *The Mysterious Universe*, and *You and Heredity*. And the fact that these books are popular shows that there is a growing demand for knowledge of the progress science is making in its several spheres.

It is evident from some of the titles given that the interest of the man in the street is beginning to turn towards the intricate workings of the human body—of his own body—which is, itself, the most complicated machine ever invented. True, much of it is still a mystery, and a great deal of what is known about it can only be stated as being the result of observation, it cannot be explained. But it is only during this century that we have begun to learn anything at all about the nature of the functioning of that physical basis of our minds, or what we consider to be the physical basis of our minds. Indeed, in the last century popular discussions about human anatomy were considered indecent, at a time when the ladies could not display their ankles without also displaying impropriety and when the masculine bathing costume had as much superfluous material in it as had the feminine.

If human anatomy was thought an improper subject of conversation, how much more were the internal organs, and most of all those internal organs, the glands. Partly, this was due to the fact that endocrinology, or the study of the glandular system, was in its infancy, but partly,

also, because glands have an implication of sex, and sex was emphatically a subject banned from discussion. Ideas, however, have changed and the younger generation is showing considerable freedom of speech in that direction.

It is noticeable, however, that there is one theme not yet treated in the fashion of popular science, namely, that of sex in terms of glands; this topic for the most part being confined either to technical works, whether psychological or medical, or to moral and religious books which purport to advise the adolescents and the young married couples how to deport themselves decently in the sight of God and man. Indeed, thirty and forty years ago, the very subject would have condemned a book out of hand as being unfit for mental consumption. To-day there is perhaps a little more hope that it will not be on its subject matter that it will be condemned. For it is with a definite object that this book is written, the object of bringing before the public eye a few facts which are all too often overlooked in the education of the citizen—most regrettably overlooked, moreover, with the result that there is a distinct intolerance and an unconscious and sometimes conscious cruelty toward some people who merit it not at all. The meaning of this will be clearer later.

Here then is an attempt to put simply to the average reader the nature of certain parts of his body, the seven endocrine organs, parts which are somehow closely connected with his character, temperament and personality, so closely connected, in fact, that injuries to, or diseases of these glands may transform a man from a respectable citizen into a degenerate or criminal.

It will, of course, be necessary in the ensuing chapters to use words which are studiously avoided in conversation—or at any rate in mixed company. If there are any readers who are nurses, medical students, laboratory

assistants or whose work is among doctors, they will probably remember how in early days, they were embarrassed to hear discussed freely in the presence of both sexes such subjects as menstruation, undescended testicles, urination or nocturnal emissions. And how, later, they became so accustomed to them that they treated these topics as they treated comments on German measles, influenza or congenital heart disease—merely as a matter of course.

Thus did sex matters, for them, fall into their right perspective. Here, indeed, is the ideal to which the general public could do no better than to strive to attain; so that it may be able to discuss freely, should the occasion arise, those things which are now over-emphasized by being made an object of deliberate shunning. This is a point which cannot be stressed too often. The more a thing is banned, the more importance becomes attached to it, and the more peoples' minds dwell on it privately.

This, most unfortunately, is what has happened in the matter of sex. We may decently talk about the pituitary and thyroid glands, but at the mention of an ovary or testis shocked expressions replace interested ones. Why must this be so, seeing that all four are the same type of organ, namely, one of internal secretion? If it is looked at in this light it should be seen how ridiculous is the suppression attitude which surrounds the subject of sex.

Some people may be afraid that a change of attitude will mean too great attention being paid to, and too much discussion of, it. This is not so, although there may be a temporary reaction in that direction. But when it has come about that no one is shocked at hearing certain words, they will not be uttered except for the reason any words are uttered—because they are somehow concerned with the occasion. We shall then all feel just like those

who work among doctors and scientists at the mention of these subjects—and that is precisely nothing. If this book can achieve this object in any small measure it will not have been written in vain.

The second part of the book is devoted to an analysis, as far as an analysis is possible, of the mind at work in a normal being. Any such study is, of course, to a great extent speculative and can only be based upon observations which, in the case of other people, are uncertain and in the case of ourselves are inadequate, because they are individual. Yet, from intercourse with others, it can be inferred that there are certain processes common to most persons and that these mental processes may be called the Lowest Common Denominator or the *Sine Qua Non* of all minds.

It might, indeed, appear that as only the fringe of the subject has been touched, either too much or too little has been said, or that insufficient reference has been made to standard works and to the theories of other people, or that the problem has been dealt with too cursorily. But this work is intended rather to stimulate the interest and promote understanding than to be in any way a text-book. Each of the two parts has the same end in view, namely, to offer such facts as are known about ourselves and our fellow men, and when facts fail to make suggestions, based on such evidence as there is, for further lines of thought.

An attempt will be made to keep away from technicalities as far as possible, and where it is necessary to use words not in common use a definition will follow. A vocabulary is also appended. Quotations from scientific works are included and references given for those with more than a popular interest in the subject. Where it is necessary to instance diseases or abnormalities, only those

will be given which are either fairly well known or of sufficient importance to merit mention and description. Other specific and rarer diseases will be left to scientific writers who expect a thorough background of knowledge in their readers. So the few who have such knowledge and who yet read this must be content that such omissions as there are, are purposeful and—we hope—unimportant to the fulfilment of our object.

It may surprise some readers that so much space is devoted to glandular and other abnormalities in comparison with the amount given to an account of the normal system. And that of these abnormalities one especially is stressed to such an extent, namely, homosexuality. Further, it may be thought that this subject belongs rather to the sphere of psychological writings, and that anyway it is so unusual as to be unworthy of more than a passing mention. If, however, any one of you has read Scheinfeld's book, already mentioned, called *You and Heredity*, he will remember that the author asserts that "from three per cent to five per cent of all males everywhere are believed homosexual". He goes on to say that in one of the largest American Universities, the medical staff reports that four per cent of the students have homosexual tendencies, and finally he adds: "In the population at large it is established that an average of one man in every thirty is strongly enough inclined to homosexuality to find relationship with the opposite sex difficult."

There is, however, a concluding paragraph in this work which is particularly worthy of recording for it presents the main justification for so detailed an account being given here. It will be recorded again later in the book when, perhaps, readers will regard it in a more sympathetic light than is likely at this point. For Scheinfeld says:

"Viewed from any standpoint, the subject calls for more

sympathy and understanding than is now being given it by the public and by the law. In the light of what little we know already, the hounding of homosexuals as criminals, classifying them with degenerates, drug-fiends and insane, exhibiting them on the stage as freaks and subjecting them to scorn and ridicule and ostracism, seems hardly in keeping with a supposedly enlightened age."

Such a change in the outlook of society, however, will not be brought about until the man in the street begins to understand the functioning of his own body, for understanding of its functioning brings with it a conception of its possible malfunctioning and hence a greater toleration. There is an old Latin proverb which runs: *Damnant quod non intellegunt*, "They condemn what they do not understand"; an attitude of mind prevalent even to-day, the result, probably, of a primitive fear of the unknown.

Yet, let it not be thought that here is a defence of immorality and licentious practices, for it is not intended as, nor indeed is it a defence of anything; but rather it is an exposition, a statement of fact, as far as the facts are known to-day, for the purpose of eliminating certain injustices, injustices arising purely from ignorance and an ignorance that is partly to be charged against ourselves but far more against our fathers, whose deliberate closing of their eyes that they might not see has been the cause of much unhappiness to many undeserving persons.

The contention that the subject should be left to psychological writers is one that raises the point at issue between the endocrinologists and the psychologists. It shows, also, the need there is for a classification of homosexuals. Any such classification would immediately suggest that what has so often been treated as a simple subject is an exceedingly complex one. It should not therefore be thrust as a simple whole into a section of a

single chapter, as is all too often done in psychological writings or quasi-psychological writings which have a religious intent. The psychologists, unfortunately—if we may say unfortunately—have had an exceedingly long start of the endocrinologists, and have popularized their results, so that really only one side of the question is before the public eye. The other side has, as yet, only been heard in scientific circles.

For the same reason, then, that we include a chapter on homosexuality we include also a chapter on hermaphroditism. For the attitude of the public towards persons who are supposed to “change their sex in mid-career” merits some time being spent on the matter. But for a definition and exposition of this subject we must wait until we reach the chapter concerned, which differs from the other chapters in that it offers technical details and makes little attempt to link up any effects of body upon mind.

As regards the other abnormalities which malfunctioning of the glandular system produces, they will be dealt with according to their importance and frequency, and it may perhaps interest some to know that in certain of these abnormalities lies, in all probability, the basis of the characters in folk-lore and fairy-tales, of giants and ogres, of dwarfs and changelings, of Tom Thumb and the old witches. Some people are inclined to think that because a science is new, the objects of that science are also new, “New-fangled diseases” and “ailments you never heard of in my young days” being phrases not so uncommonly used. Yet, to give but a few examples, the Romans suffered from gout, Rameses II was a victim of pyorrhœa, and when he died he had but one tooth left in his head, and many a poor unfortunate woman in the middle ages was burnt as a witch because she suffered from a disease

known to-day as Huntington's chorea, which distorts the frame and gives an uncontrollability of movement and tremor which might, in an age of ignorance and superstition, be thought to be due to malpractices with the devil. And let us not congratulate ourselves that we are so very much more enlightened.

It is to be hoped, therefore, that, with the progress of science, and especially of medical science, there will come about a change in the attitude of the people from a narrow-minded hypocrisy which has eyes and sees not, to a sympathy born of understanding and knowledge and intelligence, to an open mind, to tolerance of things still unexplained, to a recognition that the standard pattern is itself very variable and that there is space in the universe for all types—nay, rather, that there must be space for all types, and that it is the uncommon types that produce not infrequently the more than ordinary works or art, literature and science, and, finally, that as Dryden maintained, genius is akin to madness.

## CHAPTER II

### BODY AND MIND

Most of us, presumably, would be unwilling to agree to the view that we, as personalities, are entirely determined by the activities of our bodies, for the idea of freedom is implicit in our conception of Man or man-ness; but equally so there are few who would be so bold as to assert that they themselves are quite independent of their bodies. For the most part we are content to believe that we are what we are because of those talents and characteristics with which nature has endowed us, and because of the environment in which we have been reared; but that we may, being men and not animals, rise at any given moment above our bodies and our environment and assert our individualities.

In this chapter, therefore, we are concerned with ascertaining, within the limits of recent research, just how far our characters and dispositions are apparently caused by the structure and functioning of our internal organs. But it must be remembered that research bearing on this matter is still in its infancy. New facts are constantly being brought to light some of which harmonize with pre-existing facts, some of which appear at variance with them, and some of which seem to be quite irrelevant to them. Theories are published often contradictory to one another but equally well supported, and the results of particular experiments are interpreted and re-interpreted in the light of later results. Where possible therefore in matters of dispute both sides of the case are given, and views not established but containing suggestive pointers are put down so that those interested may judge their value by the products of future research.

An organ in so complicated a piece of machinery as the body interacts rather than acts, so that sometimes it is difficult to say whether it is that organ itself which is the cause of observed effects or whether it has affected some other organ which is the real cause. This state of affairs is most marked when dealing with the organs of internal secretion and the nervous system. Research has given us a mass of data on which to work, but we cannot say truly as yet that the mode of functioning is perfectly understood.

A gland is an organ which secretes something essential to the system or excretes waste materials the retention of which would be harmful to the body, and glands may be of three kinds: those whose secretions are conveyed away by ducts either externally or into the alimentary canal, those which pour their secretions directly into the blood stream and those which secrete more than one substance and have both means of conveyance. With the first type we are not here concerned, examples of them are familiar to us all, such as the salivary glands and sweat glands. Nor are we mainly concerned with the third type most notable among which is the pancreas (better known perhaps as sweetbread), essential to life in that it not only aids digestion but also by means of insulin controls the blood sugar level which must remain constant within certain limits. Those with which we are about to deal, belong for the most part to the second type and are generally known as the endocrines or organs of internal secretion. A typical example is the thyroid in the neck. The ovary and the testes, on the other hand have a double function. They produce ova and sperm respectively, and in addition the female and male hormones of which we shall be speaking later.

It is obvious, therefore, that neither the term ductless

gland nor endocrine organ is sufficiently accurate to distinguish the one group completely from the other; so here we shall arbitrarily use the term endocrine (from the Greek : endon, = within, krino = I distinguish) and limit its use to those glands whose internal secretions, transmitted directly to the blood, influence our development and well-being.

Now what we do know about these glands has come from clinical observation of patients suffering from one or other endocrine disorder, and from the results of experiments based on hypothetical diagnoses to see what effect the removal of this or that gland will produce in some of the lower animals. From such observations inferences have been drawn as to the function and sphere of influence of each gland and even of different parts of the same gland. Unfortunately attempts have been made in the past to generalize on the results and to classify people according to whichever gland appeared to have a predominating influence, which step was neither justifiable nor tenable—but that does not invalidate the hypothesis that they may have some direct connection with personality, and we hope here to investigate as far as possible the extent of this connection.

The list of endocrine organs with which we are concerned is that comprising the Pituitary, the Pineal Body, the Thyroid and Parathyroids, the Thymus, the Adrenals and the Gonads, that is Ovary and Testis. Of these the first two are situated within the skull adjoining the brain. The Thyroids are in the neck, the Thymus is a little lower, lying midway between the upper part of the lungs. The Adrenals and Ovary and Testis are in the abdomen.

As far as we know the main endocrine function of these glands lies in the chemical influence which they exert on the rest of the body. Certain secretions act only on the

cells of another endocrine organ, while others may act directly upon some organ other than an endocrine. For the whole body is so linked up that, although one may arbitrarily divide it into systems such as the nervous, circulatory or glandular, yet, each is non-functioning without the others.

If a gland can function it can also, of course, malfunction; and this malfunctioning can be produced by four possible causes: the gland tissue itself may be under-developed, or, again, it may be over-developed; and it may be secreting an insufficient quantity of substance or, on the other hand, it may be secreting too much. This, however, is the full scope of possible error, for one thing it cannot do is to secrete any abnormal compound. As regards hyperactivity (or over-production) of a gland there are two kinds, an absolute and a relative. Absolute hyperactivity means there is an increase in the total output, the causes of which are still obscure. Relative hyperactivity means there is an average amount of secretion produced but only by an effort that is greater than normal. For this there is a very simple analogy: we use up a certain amount of energy every time we go upstairs. But, if any of us were so misguided as to attempt to run up a moving staircase in a tube station that was supposed to be carrying us down, the energy required to obtain the same result of reaching the top would be considerably increased. For this latter malfunctioning, however, it is possible to assign a cause, for if the materials on which the gland draws to manufacture its secretion are only available in subnormal quantities in the body, it must work all the harder to extract the right amount in the right time. Means sums up the position thus:

“The economy of the body is such that the increased demand for function placed upon any organ is met, in so

far as the functional capacity of the organ will permit, by an increased delivery or supply of function. When demand for function exceeds the capacity of an organ to supply it, or, indeed, over a long period of time, natural function is too greatly encroached upon, then functional capacity is increased by means of compensating processes of hypertrophy and hyperplasia."

Thus, when a gland is overworked for any reason it tends to enlarge in order to carry out its functions more easily, and we shall see later how diseases are brought about by this compensatory act of nature, and further how the activity or malactivity of one gland has far-reaching effects upon the other endocrine organs. Let us, therefore, now consider their functioning in general; and to do so we shall start by quoting Starling (*Principles of Human Physiology*) and then try to clarify the matter by an example.

"When the adaptation to a change of A consists in the increase or diminution in the activity of an organ B, the change in B can be evoked . . . by the production at A, as a direct consequence of the stimulus, of a special chemical substance which passes into the circulating blood to B, which, in turn, will produce the required state of action. Such chemical messengers are designated hormones" (from the Greek : hormao = I excite).

This sounds a somewhat formidable statement, but it can be explained quite simply. Let us suppose that someone witnesses an event which horrifies him and calls for sudden intervention on his part; for instance, suppose a man sees his child being attacked by a dog. In such circumstances there might be a stimulation of the core of the adrenal glands. There would then result in the adrenals "as a direct consequence of the stimulus" the production of "a special chemical substance which passes

into the circulating blood". This chemical substance is known as adrenaline, and the effect of its discharge into the blood is, first and foremost, a rise in the blood pressure. But in addition to this effect the pupils of the eyes dilate, the hairs of the head rise, the breath is held, there is an extra secretion of saliva, an acceleration and increased force of the heart beat, and an outpouring of sugar into the blood to facilitate muscular action.

Other changes there are too; they need not concern us here; but that mentioned above of alertness and a mixture of fear and anger has surely been felt by us all in moments of stress, and they are necessary preliminaries to sudden action when encountering an abnormal situation.

Endocrine organs have, so far as we know, for their sole function "the production of some substance, the presence of which in the blood is a necessary condition for the carrying out of the normal functions either of growth or of the activity of many other parts of the body". (Starling.)

In surveying each gland individually we shall start with a consideration of that which is perhaps the most familiar and the one which has been before the eye of the scientist for the longest time, namely the Thyroid gland (described by Galen, a Greek anatomist in the second century A.D.), the secretion belonging to which is a compound of iodine.

Two oval bodies, the Thyroid glands, are situated one on either side of the trachea or windpipe, and the iodine compound with which they are concerned is essential to correct bodily function. The foundation for this secretion the thyroids extract from the blood which normally contains a certain small percentage of iodine. Any failure, therefore, in this primary source leads either to a deficiency in the amount of secretion or to an overgrowth of the glandular structure to enable it to keep up its level

of output. In either case the individual suffers, as we shall see. In general the thyroids are the managers of the chemical factories of the body, or, to put it in scientific terminology, "control the basal metabolism". Temperature, cardiac movement, respiration, emotional and nervous reactions all come under its regulating influence. Therefore it is not surprising to find that symptoms accompanying some definite disease of the thyroid involve these mechanisms. Shortness of breath, pain in the heart region, palpitations, giddiness, sweating, blue extremities, quick pulse, low blood pressure, and emotional instability; some or all of these may be present showing how closely related are the different organs of the body.

If, however, we take in order the four causes we listed of the malfunctioning of this gland, we must consider first the effect of gland tissue being under-developed.

Most of us know what a cretin looks like. Some forty years ago such a creature was not an uncommon sight. He or she, though reaching adult years, never grew beyond childish proportions and was characterized by a wrinkled skin, ugly face, protruding tongue, and a childlike character and intelligence. It was discovered, however, that the cause of this maldevelopment of the child was due to the atrophy or degeneration of the thyroid gland itself, but later it was also discovered that if the child was fed with sheep's thyroid fresh, dried or partially cooked, these ugly little idiots became in no great way different from other people, achieving normal minds and normal bodies, although they might never shine intellectually. But cessation of the treatment, which has to be continued throughout life, means the return of these persons to their cretinous state.

This, then, is what occurs when there is a deficiency of the thyroid gland present in the infant, and it is thought

to be due to degenerative changes in the gland during foetal life which may result from an infection of the mother during pregnancy. When, on the other hand, the gland has been functioning normally in a normal person and begins to atrophy in middle life, he or she starts to show considerable alterations both mentally and physically. This is a disease which is called myxœdema wherein the sufferers are blunted gradually in their mental activities, words come slowly and thoughts slower still. Their faces and hands become puffy and swollen, and their complexions appear a waxy yellow with a patch of colour on each cheek, the pulse-beat slows up and the temperature is subnormal. Here, again, treatment with thyroid will bring about recovery to a great extent for as long as the treatment is continued.

From deficiency of the gland, therefore, we can infer that normal intelligence is dependent upon the thyroid stimulation almost as much as it is upon the correct development of the nerve cells of the brain.

On the other hand, where there is a lack of the iodine only there occurs a well-known disease caused by an overgrowth of the glandular tissue through compensation, which produces a swelling of the neck called a goitre. This is known as endemic goitre because the disease is prevalent in a particular area, probably though not certainly due to a deficiency in the soil, or water, for from such do we assimilate the chemical basis of the iodine in our blood. Secondly there is toxic goitre with which is frequently associated eye trouble in the shape of protrusion of the eyeballs. The exciting cause of this second type is excess secretion due to the gland enlarging in size, but the odd thing is that toxic goitre (Graves' disease) can be brought on apparently by psychic stresses such as emotional shocks, nervous strain and tension as

in wartime, financial and family worries, post-operational fears, ailments such as influenza and acute tonsillitis and events of the sex life, adolescence and the menopause; so frequently, indeed, have these been associated with its onset or relapse that they have now become to be regarded as predisposing causes.

Some explanation of this would seem to be forthcoming in recent research done on the electrical interactions of the body, and though details of this are beyond the scope of our present purpose let us quote Crile to the effect that the hormone elaborated by the thyroid "raises the potential of cells . . . thyroxin influences the rate of flow or interchange of chemical substances within the cells". And again: "Man has a relatively larger thyroid gland than any other animal, and greater mental, emotional and physical activity. He owes these characteristics to the relatively large development of the brain which, collaborating with the thyroid gland, produces the required amount of powerful short-wave radiation." Hence an over active thyroid means an over-stimulated brain, but it is also obvious (and this Crile points out) that we cannot have a high degree of intelligence without a slightly greater thyroid production than the average.

Behind the Thyroid lie the Parathyroids, two bodies on either side of the windpipe, and these control the calcium and phosphorus content of the body and so are important in growth. If they are removed surgically, or accidentally damaged, there is produced a nervous disorder, tetany, which often proves fatal. But as they are not apparently closely connected with the owner's personality, so far as we know, we shall not consider them further.

If we turn now to the Thymus we have here a gland that atrophies at puberty. According to the latest writers

it continues to develop up to the age of fifteen or thereabouts, although earlier researchers have put the peak of its existence variously at two and seven years. At all events they are agreed that if it fails to atrophy at puberty, and exists into adult life, then there is trouble for the individual. Because of this atrophying process which takes place some, indeed, doubt whether it should be classed among the endocrine organs at all. It does not seem to contribute anything to the adult man or woman save a well-being as the result of its absence.

This gland has something in common with another, namely, the Pineal body, in the amount of disputation there is as to its effects and its proper classification. The pineal is in direct connection with that part of the brain called the hypothalamus, and how far misfunctionings attributed to the gland are really attributable to the brain is not yet assessable, and so there is little we can say about it to our purpose now.

There is, however, one point of historical interest in connection with it. Descartes, a seventeenth century philosopher whose contribution to that subject was no mean one, thought that the pineal body was the seat of the soul. This view was based upon the mistaken idea that it was the only part of the brain that was not present in duplicate in every person; mistaken, however, because the pituitary also has no fellow. Both these glands hang from the brain connected to it by nervous tissue in splendid isolation, as it were, whereas other parts of the brain are paired off, the right side or hemisphere corresponding to the left. But for the existence of the pituitary, therefore, Descartes might have had some grounds for the belief; but the progress of science has shown that neither in the pineal body or elsewhere can we establish a physical seat of the soul, for as the sound is to the drum

when struck, as the current is to the battery and circuit, so is the soul to that physical basis which we alone can study, the body.

The pituitary gland hangs like a ball on a slender stem from the base of the brain just behind the optic tract. It is divided into two lobes by a narrow cleft, the areas so formed having a different origin and quite different functions. They are known respectively as the anterior and posterior lobes of the pituitary, and of the two the anterior is by far the more important, as it is, indeed, of the whole endocrine system.

The posterior lobe is of comparatively little interest, chiefly because so little is known about it. Its function has some connection with the onset of labour in the pregnant woman and also with the chemical balance of the body, for hormone extract of this lobe raises the blood pressure, controls the output of urine and stimulates the muscles, thus resembling the action of adrenaline. It is in close connection with the hypothalamus, damage to which causes degeneration of the lobe, a condition that will produce a disease called diabetes insipidus, better known as thirst diabetes, a state in which excessive urination and corresponding excessive thirst prevails.

Much more is known about the anterior lobe. Cameron (*Recent Advances in Endocrinology* 2nd edn.) writes (p. 318) that there is considerable evidence that the anterior pituitary "elaborates a number of distinct endocrine compounds" which control amongst other things the growth of the body, the sex organs, the thyroid, the parathyroids, the adrenal cortex, the hormone activity of the pancreas, the correct balance of fat in the body and the secretion of milk in the mother. Let us, therefore, consider how diseases of this lobe will affect the individual.

Firstly, then, under-development produces dwarfism

and we see a well-proportioned midget, but when there is a deficiency in functioning in a child, he or she becomes abnormally fat while sexually remaining infantile in development. There are several types of this disorder which, respectively, have slightly different effects upon the brain and body of the patient, but the general appearance is well exemplified in the *Pickwick Papers*, in that classic example given by Dickens of the Fat Boy who, true to type, spent most of his time sleeping but, when he was awake, was not far behind the normal boy in intelligence.

Now, if the anterior lobe of the pituitary in animals is artificially destroyed or removed, the same state can be produced; a fat and infantile rat, for instance, can be made out of one born normal. And, correspondingly, if injections of anterior pituitary extract be given to such young animals they will develop normally again. On the other hand, if young normal rats are given these injections there is a premature puberty. (This isolation of hormone extracts has made it possible to learn a great deal more about the action of the glands, and it is only by experiments such as these that we can learn how to treat diseases in the human race and the results have more than justified the means.) Recently, moreover, it has been shown that injections of the hormone of the anterior pituitary into a special strain of dwarf rats brings about a normal development of bone structure.

Over-functioning of the pituitary is known as hyper-pituitarism (Greek : huper = over and above), and if it is active in the child the disease is called Gigantism, but if it occurs in adult life after growth has ceased it is called Acromegaly. We have all read in our daily papers from time to time accounts of men and women measuring seven or eight feet high. Apart from this, however, they

are perfectly proportioned. In character and intelligence, too, they may not differ much from other people, although the intellect seems to become dull as time goes on, and they may, of course, be affected psychologically at being abnormally tall. Thus Cameron (*op. cit.* 5th edn. p. 359) describes a patient, a boy of eighteen years who was at that time eight feet odd in height without being in the least disproportioned. His father and brother were stated to be normal.

The second type of giant is the one whose pituitary misfunctions when he or she is fully grown. The acromegalic is less happily situated than the individual already described, for the effect produced is not merely one of outsize but of considerable distortion. The head, the hands and the feet are the parts chiefly affected, but the bones of the trunk may be also. The jaw and the top of the head become elongated and there is a distinct lack of proportion all over.

It is likely that in these phenomena we may find the origin of our fairy stories of ogres and giants. But there is nothing to suggest the additional character of villainy with which they are so often associated in these stories is in any way justified. It is more probable than in days gone by, the friends and relations of such people, hampered by superstition, cast them out of their towns and villages, so that they were forced to live the life of outlaws, rambling through the forests and possibly, as the result, preying upon unfortunate travellers until death claimed them.

It seems reasonable to suppose, and it is not without evidence, that dwarfism (as opposed to infantilism, which is lack of sexual development only), is due to deficiency of the anterior pituitary if, as we have seen, injections of the hormone produce a normal growth in dwarf rats and

if over-development makes for gigantism. It cannot, however, be asserted definitely as yet. Another result of deficiency of a hormone in this part is the production of old age in childhood, paradoxical though this may sound. To quote Langdon-Brown, he says: "Cushing has published a photograph of a girl of eight whose expression and bodily aspect would have been more appropriate to a woman of sixty."

As the pituitary is known to secrete a variety of hormones or "chemical messengers", each controlling the functions of some other glands, let us see what happens when this gland is removed.

If it is taken out before the animal has reached puberty, infantilism and dwarfism results; if after, in the male, the testes and penis atrophy, and in the female, correspondingly, there is a degeneration and loss of function of the ovaries. The thyroid gland degenerates similarly, as also does the cortex of the adrenals, although the medulla is unaffected (*vid. inf.*). Finally, the flow of milk from lactating breasts is stopped. On the other hand, injections of pituitary extract cause the thyroid to over-develop and produces precocious sexual development and growth of adult proportions prematurely.

Pituitary tumours are many and various. Besides those which may result in over-secretion, the root of gigantism, acromegaly and obesity which we have considered, there are tumours which affect the surrounding parts of the brain, and, since the pituitary is in close proximity to the optic tract, some of these tumours bring about blindness in the patient. Their nature and differences are too technical to give a detailed discussion of them here, nor do they affect the personality. But one point of outstanding importance must be mentioned, although anything more than a reference would take us outside the scope of this work.

The pituitary, as we have said, hangs like a ball from a slender stalk, the infundibulum (Latin = stalk), which is attached at its upper end to the hypothalamus. Whereas the pineal body adjoins the dorsal side of the hypothalamus, the pituitary hangs from the ventral area. We have said before that the hypothalamus appears to exert an influence on the posterior lobe and that it is the main relaying station along the track of the nerve fibres from all parts of the body. Sexual precocity, at one time thought to be due to tumours of the pineal, are now tentatively attributed to stimulus of the pituitary by the hypothalamus. Moreover there seems to be considerable evidence for "the conception, based on physiological studies, that the hypothalamus and the hypophysis (Greek word for pituitary) form together a neuroglandular mechanism as a functional unit" (Le Gros Clark: *The Hypothalamus*). Just as in the sciences of physics and chemistry there is a meeting ground in physical chemistry, and the dividing line between the two is less obvious than it seemed to be fifty years ago, so there is evidently a meeting ground of the hormonal system ("corporal" chemistry) and the nervous system ("corporal" physics); and the division made between nervous control and chemical control will probably disappear in the light of new knowledge, especially in a better understanding of the electrical mechanism of the body.

Fifth in our list of the endocrines come the Adrenals. These are two small bodies lying on the upper side of the kidneys, and each adrenal gland consists of two parts, a cortex and a medulla. Now the cortex of anything is the outer part, while the medulla is the central pith or core. These two parts are quite distinct as tissues, having different structures and different functions. Moreover, the former is apparently essential to life while the latter

is not. We have already seen something of the activity of one part of the adrenals when considering the endocrines in general and when illustrating Starling's rather involved statement as to the nature of their action on the body. This is the part called the medulla, which, when stimulated, secretes a substance called adrenaline which brings about a constriction of the blood vessels and the consequent raising of the blood pressure. This, having been referred to already, we can pass over here, and go on to consider the cortex, the greater importance of which is proportional to the greater mystery which still surrounds it.

A tumour of the adrenal cortex in an infant, if a girl, will cause her to start menstruating at an early age, at two years or even sooner, while other sex characteristics also develop. But certain cases have been reported where besides menstruation there was a hair growth of male distribution together with a deepening voice coarsening, of the skin and fat increase. (See Rolleston.) If the child be a boy, on the other hand, there will be a type of infant Hercules produced, the chief features of which are excessive hairiness and strength.

The legend connected with Hercules, it will be remembered, is that while in a cradle asleep in a room with his brother alone, he saw two snakes crawling towards the other cradle to attack the boy. Hercules was found later sitting up in his own cradle, crowing with pleasure and holding up by the neck, one in each hand, the snakes which he had strangled. Hence the title of "infant Hercules" is given to the type of male child who suffers from an adrenal tumour. This form of sexual precocity is similar to that produced as we saw by tumours of the hypothalamus, but they can be distinguished by surgical exploration. (It does not, of course, follow that Hercules,

who became a god, and was known also in Greek mythology as Heracles, was a victim of this disorder. But it may account for the legend.)

If a tumour occurs in adult life in the female, there is a general masculinization. Broster, in his book, *The Adrenal Cortex*, describes some sixteen cases of these tumours occurring in young women which have passed through his hands. Such a patient begins by noticing an increased irregularity in, and finally cessation of, her menstrual periods. At the same time there is an increase in the growth of hair all over the body, the distribution following the male lines, so that the abdomen up to the navel is covered in triangular fashion, and there is also growth round the buttocks, on the limbs and on the face. Her voice deepens, her skin becomes coarse, and the clitoris enlarges to resemble a small penis. She becomes muscular, the uterus and ovaries atrophy, and the whole effect is one of masculinity. It does not, however, follow that the psychology of the woman alters with the alteration in her bodily aspect. Hence it can easily be imagined how intolerable is the situation in which such a person finds herself; indeed one case has been reported in which the patient's first symptom was an overwhelming fear she was turning into a man. And this is a point which might well be kept in mind in view of the next two chapters. Fortunately, it is possible to-day to remove the tumour with reasonable chances of success; and when this is done it has been claimed that the surplus hair falls out or can be plucked out quite easily and that a certain renewal of those functions which have ceased may occur.

Last in the list of endocrine organs come the Ovaries and Testes, known generally as the gonads. As we have seen something of the effect of alteration of other glands upon these, we must now consider what happens when

there is a direct affection of them. The main portion of the testes consists of a lobe in which are the seminiferous tubules where the future sperm cells are produced, and a mass of tissue between them containing clumps of interstitial cells (so-called because they lie between other cells). The latter are all-important for they reproduce the male hormone which is responsible for the development of the sex characteristics and instincts of the man. This hormone has been prepared commercially under the name of testosterone. Thus the testes have a dual function, the elaboration of male hormone and the formation of sperm cells. But, as we have seen, they depend for their existence on the presence of the appropriate hormone in the pituitary.

To quote from Werner:

“If the anterior pituitary gonadotropic hormone is secreted in insufficient amounts or is absent, the testicular development and function are accordingly diminished or absent. In the absence of the gonads the anterior gonadotropic hormone can have no effect on the development of the secondary sexual characteristics, for this is the function of the testicular hormone.”

If the testes are removed before puberty is reached, the rest of the reproductive apparatus does not develop, the prostate is small and atrophic and the secondary sex characteristics do not appear. There is no growth of hair on the face, therefore, nor on the body, the pubic hair is feminine in distribution, the outline being concave upwards and the voice remains high-pitched. Fat may accumulate on the buttocks, hips and breasts, and the mental make-up tends to be feminine. On the other hand, there is much diversity of opinion as to the effects of castration after puberty. For some years there seems to be little alteration at any rate in sexual desire; but it

seems that, in due course, the virility will disappear and the corresponding state of a climacteric will take place earlier than usual, when some reversion to the female type will occur and there will be a marked increase in the fat content. The difficulty of obtaining sound reports owing to the reluctance to admit loss of virility has hampered research in this direction, but it is assumed that in the many cases where the retrogressive influence has been gradual the cause may be due to the persistence of hormonal secretion in the pituitary which, like the flywheel on the crankshaft, keeps the cycle going after the primary stimulus have been removed; the process losing momentum when there is no return of the stimulus.

In 1910, recognition was given first to the fact of a male climacteric in a paper published by Kurt Mendel. The symptoms correspond very closely with that of the female which has been recognized from the earliest times. And it is of special interest that there is apparently a close connection between the psychology of the patient and the bodily changes, in the male as much as in the female. Headaches, insomnia, faintness, giddiness, are some of the physical effects, and they are accompanied by a lack of energy and sense of depression, a desire to withdraw from society and possibly also suicidal tendencies; these are some of the psychical phenomena of that age.

Now it is reasonable to suppose that all this is due to the degeneration of the interstitial cells of the testes. Indeed, there seems to be but little doubt in the minds of endocrinologists that their absence is associated with these emotional changes just as it is with the physical. The degeneration of these cells sometimes also has another effect upon the individual, for as they deteriorate there may occur an atrophy of the prostate gland which is normally stimulated by them. Prostatic enlargement, on the other hand, in old age produces an increased sexual

desire and a hitherto decent married man may go off suddenly with a chorus girl or be found guilty of indecent exposure or assault. This, happily, is comparatively rare, but such cases have appeared in the press from time to time and, whereas these persons are usually sentenced to a term of imprisonment, the proper and harmless remedy is removal of the prostate, an operation which usually has to be performed in due course anyway for the health of the patient.

The commercial preparation, testosterone or male hormone, has been used with some success in the case of castrated males and with varying degrees of success in young males whose development is infantile or whose testicles are undescended.

The Ovary, like the testis, has a dual function, the production of the ova corresponding to that of the sperm cells and the elaboration of two hormones, progesterone and œstrin, both of which play their part in the menstrual cycle and pregnancy. Further, like the testis, it is dependent on the anterior pituitary gonadotropic hormone for its own development and functioning.

As with the testis, so with the ovary, loss before puberty leads to a neutralizing of the sex, the failure, in fact, of all the changes that take place in normal women, the development of the uterus and the vagina at puberty, the menstrual cycle, and the appearance and persistence of the secondary sex characteristics. But there are on record some cases of such persons marrying and living happily as wives, so that the psychological reaction is not so marked as in the male. Removal of these organs in adult life brings about an immediate climacteric involving cessation of the menstrual cycle, which normally occurs between the ages of forty-five and fifty, five to ten years earlier than in the male. With it are associated

changes of character in the person and possibly temporary eccentric behaviour, the symptoms being the same as those previously enumerated when the cells of the testes begin to atrophy. At this time the ovaries degenerate along with the uterus and vagina, and certain male characteristics may appear such as hair on the chin and a roughened voice. Hormone injections of ovarian extract can, however, be used to counteract acute effects.

Tumours of the ovary are on the whole rare and usually benign, but there is one type called an arrhenoblastoma which produces a picture closely resembling that outlined as the result of tumour of the adrenal cortex. A complete physical masculinization of the female occurs. On this subject Werner writes, quoting: "A point which, it seems to us, has not been sufficiently stressed is the fact that the medulla of the gonad (ovary) is a determiner of masculinity and the cortex of femininity of their contained germ cells." It is true that there are two different structures in the ovary as in the adrenals, a cortex and a medulla, but there is considerable disagreement as to the significance of the medulla, and therefore we shall here quote the whole passage from which the above extract was taken. (*Endocrinology*: p. 448.)

"An excellent article was written by Novak and Long in which they state: "Each zygote (the individual resulting from the fusion of two sex cells) is primarily bisexual, so that in each woman there are rudimentary homologues of many male structures and *vice versa*. Of these the one that concerns us now is the rete ovarii, which is not a mere analogue, but the actual homologue of the male testis. To put it another way, every woman shelters within the medulla of the ovary a potential testis. Under certain conditions this undifferentiated tissue may become

active, and its male endocrine influence may override the primary female tendency with the production of varying degrees of intersexuality. . . . The histogenesis of these tumours according to Meyer is to be sought in undifferentiated cells persisting in the rete (ovarii) and capable of later function along either male or female lines. The masculinizing group of tumours, or arrhenoblastomas, develop in the potentially testicular cells in the rete ovarii, and through their hormonal effects override the feminine influence of the ovary. Meyer's explanation seems to have been rather widely accepted, although, until more is known concerning the factors involved in normal and abnormal sex differentiation, it must be looked on as an excellent working hypothesis rather than a demonstrated fact. A point which it seems to us has not been sufficiently stressed is the fact that the medulla of the gonad is a determiner of masculinity and the cortex of femininity of their contained germ cells. This observation, championed by Witschi, is based on excellent biological evidence. It is therefore not surprising that tumours arising in the ovarian medulla should exert a masculinizing influence. Incidentally it is suggested that cortical tumours of the suprarenal gland, which embryologically is so closely associated with the ovarian medulla, characteristically produces syndromes similar to those seen with arrhenoblastomas. The clinical manifestations of these tumours vary according to their degree of their masculinizing hormonal influence; and this in turn appears to be a reflection of the degree of indifferentiation of the tumour cells. In the most extreme cases, the woman who has previously been of normal feminine type becomes amenorrhœic, the breasts flatten and atrophy, a heavy growth of hair appears on the face, chest, abdomen and lower extremities, the figure loses its normal feminine

curves and assumes the typically more angular contour of the male, and the voice becomes deeper owing to laryngeal hypertrophy. The clitoris shows such hypertrophy as to be almost penis-like in proportions. Removal of such a tumour leads to regression of the symptoms, thus establishing the causative role.

Other American writers give this same account of the masculine propensities of the medulla of the ovary, but the view is not apparently generally accepted in England, though it would seem difficult to account for such effects of tumours by other means unless it were by suggesting an influence of the adrenal cortex. It is only fair, therefore, to quote an English spokesman on the subject.

Broster (*Endocrine Man*: p. 81) writes: "The cortex or outer layer of the ovary is composed of follicles in different stages of maturation, from which ova are set free. . . . The supporting cells of the medulla have a much less definite function. The theory has been advanced that the ovary is essentially a bisexual organ, and that these medullary cells are the homologue of the interstitial cells of the testes. No satisfactory explanation of this theory has been given. It is true that the arrhenoblastoma, a rare tumour of the ovary is associated with virilism; and it has been suggested that the cells of this tumour are derived from the medulla cells. But in a long series of observations Vines has been unable to confirm this view." The problem stands. Werner, in the case histories he quotes, unfortunately gives no hint as to the psychological outlook of the patients; and any male instincts present may be but coincidences. When, however, we reach the next chapter, we shall see that it is likely that masculine instincts in the woman and feminine instincts in the man are probably the result of some accident of foetal life, so that the individual knows no other way of behaviour; at least, these

observations on the erratic coincidence of perverted instincts with bodily changes, would seem to suggest something of the sort.

Since such information has come to light on the matter of the glands, it is only natural that attempts have been made to rectify errors of functioning by injections of the two antagonistic hormones, so that we must now consider their various uses both in connection with the same sex and also with the opposite sex. We have already said that eunuchs can be made normal or approximate to normal by injection of testosterone or male hormone. Similarly, menstrual irregularities, amenorrhœa (absence of menstruation) and the disturbances of the climacteric can be remedied to a great extent by injections of œstrin or female hormone preparation.

What, then, happens if male hormone is injected into females and if female hormone is injected into males? It is known that all males secrete and excrete in the urine a certain amount of female hormone as well as of male; and that females secrete and excrete in the urine a certain amount of male hormone. There is also some evidence for supposing that small injections of either hormone given, irrespective of sex, has a stimulating effect upon the organs of both sexes. Unfortunately, the reason for this is not yet quite clear.

A somewhat different result is obtained, however, when large doses of the contrary hormone are given over a prolonged period. In a normal woman treated with male hormone for menorrhagia, where it was necessary to give more than the usual dose to obtain a cessation of the flow of blood, it was found that there was some increase in the growth of hair and a slight enlargement of the clitoris together with a diminution in the size of the breasts. But this mode of treatment is scarcely out of the experimental

stage; excellent results have been obtained in various types of diseases by hormone treatment, but all avenues have not yet been fully explored.

Some experiments performed on animals have fairly constant results, so a few of them will be quoted here. In adult female animals not castrated, large and repeated injections of testosterone lead to an atrophying of the ovaries and uterus, but the most striking results have been obtained from animals first castrated. A young male rat so treated and then injected with female hormone for a long time, was recorded to have suckled young, the result of the development of the mammary glands, and to have allowed itself to be used by other males as if it were a female. This is an interesting example of annihilation of the proper instincts due to physical changes. Hen chicks have been made to grow combs and tails and observed to crow like cocks after being treated thus; but there have been many recorded cases of hens turning apparently naturally into cocks, due to the fact that a hen has only one active female and one structurally indifferent and inert gonad. This is a common feature in many kinds of birds, and the reason for it is still a matter of conjecture as also is the reason why the inert gonad should sometimes develop into a testis and suppress the action of the ovary.

It should be clear now that, as the result of the close inter-relationship which exists between the endocrines, impairment is never limited to a single gland, for that gland may either cease to assist another gland which is dependent upon it, or may release its control so that the limitations it has hitherto imposed are transgressed.

The oldest gland, excluding the reproductive apparatus, is the Thyroid; oldest both absolutely and relatively, absolutely because it was present in the Reptilian Age,

and relatively because it was the first around which scientific knowledge and interest centred. In the process of evolution, however, it has come under control of the more recently developed pituitary upon which it has finally come to be dependent, since removal of the pituitary leads to atrophy of the thyroid.

The Thymus, on the other hand, is thought to be antagonistic to the thyroid because it has been found to persist in patients with ophthalmic goitre. Moreover, myxœdema is made worse if thymus extract is taken by a person suffering from it. The Adrenal cortex and the thyroid are in direct connection, and Crile has shown that the cortex can become over-stimulated by affection of the thyroid. The gonads do not seem to have a specific influence on the thyroid although they have a restraining effect on the pituitary.

The Pituitary is, within the limits of our knowledge up-to-date, the master of the glandular sphere. Without it the testicles would not develop, without it ovulation would not occur, without it the thyroid atrophies, without it bone growth is retarded, while with excess of it there is gigantism and acromegaly, and it can cause a developed breast to secrete milk even in the absence of ovaries. That the pituitary itself comes under the sway of the hypothalamus is the latest belief, and some think that the hypothalamus and the thalamus are under the domination of the cortex of the brain . . . but at this stage of our knowledge it is better to say too little than too much.

In conclusion, therefore, let us quote Wright's excellent summing up of the relationship of the pituitary with the other endocrine organs. In *Applied Physiology* he writes:

"Somewhat romantic and flattering titles have been applied to the pituitary, of which 'leader of the endocrine orchestra' is a sample. Some workers visualize the

pituitary as a sort of dictator, uncontrolled by the nervous system and regulating the activity of most of the other ductless glands and of certain other organs. A basic principle of modern physiology, however, is that all organs of the body work together in a co-ordinated and harmonious manner to maintain the constancy of the internal environment or, in other words, to preserve the integrity of the organism. It is almost certain therefore that the activity of the anterior pituitary itself is regulated appropriately, but by means which are at present little known. If we regard the anterior pituitary as the centre of the hormonal reflex arc, then we can say that we know a great deal about the efferent side of the arc, i.e. what the pituitary does to other organs, but comparatively little about the afferent side of the arc, i.e. the control of the pituitary itself." These words were written in 1928.<sup>1</sup>

There is one line of research which has been left almost untouched in this connection, and that is the possibility of a relation between the endocrines and the intelligence, the one glimpse we have had being in connection with the thyroid. But, as has been pointed out, endocrinology is a subject still in its infancy and there lies ahead so vast a field for speculation and experiment that, in now touching the fringe of the matter we shall do well to remember those words of Pope:

"So pleas'd, at first, the tow'ring Alps we try,  
Mount o'er the vales that seem to tread the sky,  
The eternal snows appear already pass'd  
The first hills and mountains seem the last.

<sup>1</sup> In the 8th edn. 1945 (p. 264) the statement has been modified in the light of more recent knowledge which confirms his earlier suggestions given here.

But those attained—we tremble to survey  
The growing labours of the lengthened day,  
The increasing prospect tires our wand'ring eyes,  
Hills mount on hills and Alps on Alps arise.”

## CHAPTER III

### HOMOSEXUALITY

WE have seen how injuries to, and diseases of, the endocrine organs can produce changes in the physical make-up and sometimes also in the mental make-up of the unfortunate individual affected. How adrenal tumours can have a masculinizing effect upon women and can also evolve the infant Hercules. How gigantism and infantilism and dwarfism can result from over-functioning and under-functioning respectively of the pituitary. How deficiency of the thyroid begets a cretin or causes myxœdema, and lack of iodine causes goitre. How the thyroid and the brain are in the closest connection and intelligence depends upon an active thyroid provided that the limit for safety is not passed. How a tumour of the medulla of the ovary will make a pseudo-male out of a woman, while deficiency of the testis secretion will bring about a state of eunuchoidism in the male. And finally how the correct balance between the male and female hormones in each one of us is necessary for a normal character.

These revelations may be rather startling to those who have been taught to believe that "God made them male and female", the one to the exclusion of the other. But it is fast becoming evident that there are not only two sexes but several grades, although it is true that the possession of testicles to the exclusion of ovaries makes for the male, while the opposite is true of the female. These intersexes, it should be noted, have the primary characteristics of male or female, i.e. of the gonads, the ovary or testis; but they display also the secondary characteristics of the other, including the temperament. Now since study of the abnormal is one method of

approach to the examination of any subject this chapter deals solely with those who are in the awkward predicament of finding that their sexual interests are directed toward the members of their own sex and as such are self-contradictory or abortive. This state is known as homosexuality.

The average man or woman comes into contact with this chiefly in adolescence, either in connection with his own affairs or those of his children, but it is not with this transient phase that we are here concerned, and it can be passed over briefly. At puberty and for a year or two after the sexes are very often strongly antagonistic towards one another and prefer to turn to their own sex, so that hero- and heroine-worship, that common feature of school stories, takes place. This is not to be regarded as anything but a natural process in view of the fact that the sexes are so carefully segregated at this time in their respective schools.

R. G. Gordon, in his book *The Neurotic Personality* (p. 70), writes on this subject: "The homosexual tendencies of the young should be looked on as delays in development rather than as definite perversions, and it must be rare that such practices persist in after life when opportunity of heterosexual intercourse arrives."

There are, however, other types of homosexuality which remain a permanent feature in a person's life, and it is with these that this chapter is concerned. For the sweeping condemnation usually made of such shows mere ignorance and intolerance, without justification or distinction of persons. There is much truth in the remark of Allers: "It may be that the extreme horror of some people—otherwise not hypercritical—towards all kinds of homosexuality or suggestions of homosexuality, is the result of the overcoming, suppression, repression, of such a

possibility in their own personalities." It is well known that we are most ready to condemn in others the faults we know secretly to be present in ourselves.

The subject of homosexuality has become a battleground, between, on the one hand, the psychologists, and on the other, the endocrinologists. There are, indeed, mediators who try to bring peace by maintaining that there is a grain of truth in their opponents' arguments, but this half-hearted stretching out of the hand of friendship does little to reconcile them. We should like to suggest, therefore, that the difference of opinion is due to an insufficient classification of different types of homosexuals, and even, in some cases, a lack of any recognition of a distinction at all. It should later be evident that neither early experiences, the line taken by the psychologists, nor structural abnormality, the view of the endocrinologists, serves as a complete answer to a problem that is complicated by individual variation.

Kahn in his book *Psychopathic Personalities* (p. 126), says: "The opinion seems now gradually to be gaining ground that there are several kinds of homosexuality, and that furthermore between the extremes of an early manifested type and of an accidental type there are all possible transitional forms." What, therefore, we must try to discover is a criterion by which we can draw the line between those who are homosexual because of some early experience and those who are so as the result of some endocrine disorder."

In the first place it must be admitted that very many homosexuals show no bodily abnormalities at all; they can pass, for the most part, unsuspected save by the few to whom they reveal themselves. Many, also, can be recognised only by their style of dress, hairdressing and interests. Others are suspected, perhaps, by their bodily

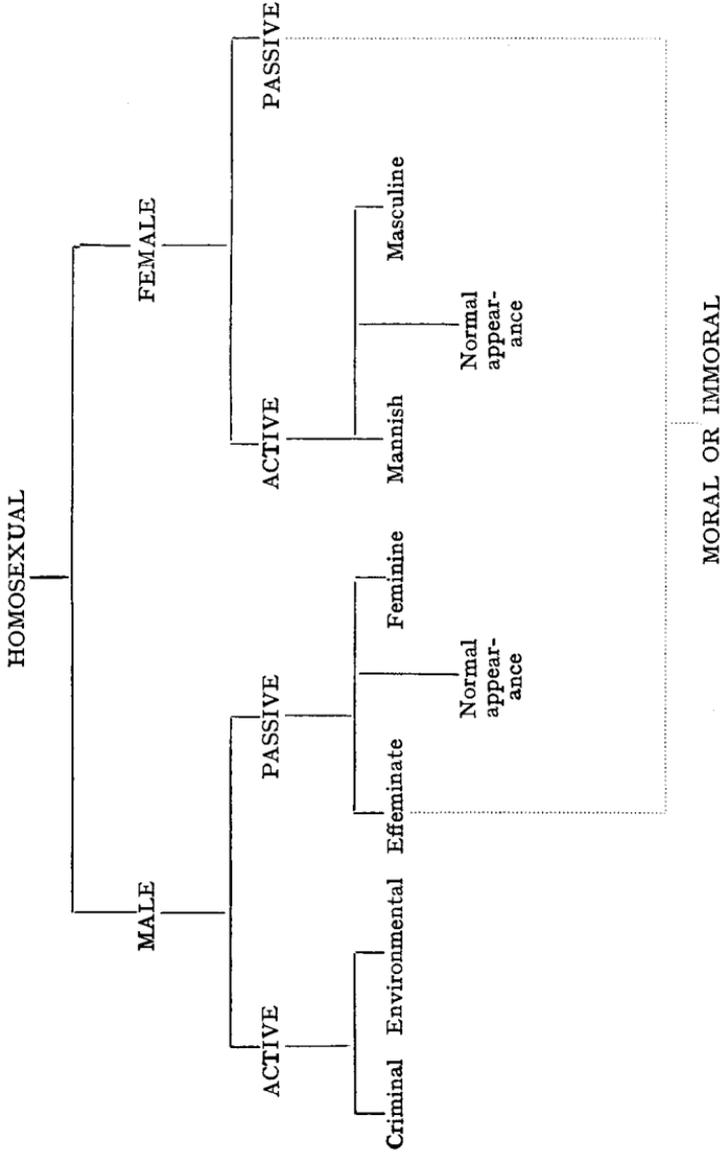
contours, physique or mannersism; while others, again, may have the secondary characteristics of the opposite sex.

On the other hand certain sufferers from endocrine disorders have, as we have seen, no corresponding psychical changes, so that, while developing physically into a parody of the other sex, they yet remain, in their feelings and temperament, as before. Of the sixteen cases mentioned by Broster, already referred to, of physical alterations in women due to adrenal tumour, only three were reported to have male instincts which could, therefore, have been coincidental.

It seems likely, in view of this, that some homosexuals are psychological cases and some endocrinological; and hence it will be necessary to classify them to determine which may perhaps belong to which sphere. To simplify appreciation of such a classification, a table is inserted.

The first division is into male and female, for homosexuality is not peculiar to either sex. The second division is into the active male and the passive male, the active female and the passive female. That is: the man who desires men to submit themselves to him as if they were women: the man who wishes to be treated by men as if he were a woman: the woman who wishes to behave towards other women as if she were a man: and finally, the woman who wishes to submit herself to other women as if they were men. Of these, the active male and the passive female may be indistinguishable from their fellows in other respects; indeed, in some cases they might be described as ultra-male and ultra-female. But the passive male may appear as either normal or as effeminate or feminine, and the active female as either normal or as mannish or masculine.

It may be well, here, to add a note on the distinction between the terms "Effeminate" and "Feminine", and



between the terms "Mannish" and "Masculine". It is not a new distinction but it is one that is all too frequently overlooked. The difference is that of the deliberate adoption and imitation of the habits, interests and dress of the other sex (Effeminate or Mannish), and of the natural acquisition of them as the result of the innate possession of the mental outlook and temperament of the other sex (Feminine or Masculine).

The final division of homosexuals must be into those who follow their desires without restraint and those who abide by a rigid moral code throughout their lives at no slight cost to themselves. Indeed, one writer gives this as the only distinction between them! Thom, in *Normal Youth and Its Everyday Problems*, says: "There are two distinct groups of so-called homosexuals. The first so-called overt homosexuals, who practise various types of sex activity not socially approved constitute a relatively small group. They are recognized as a social menace. . . . The second group is relatively large and far more important, inasmuch as it is composed of potentially good citizens. These individuals are torn with conflict; they are battling with unseen forces with only defeat ahead unless they are assisted."

It is certainly true, but seldom appreciated, that the *tendency* towards homosexuality is itself not psychically controllable, much less immoral; and credit is seldom given to those with such tendencies, who yet deny themselves the fulfilment of their desires and are therefore robbed of a sex life altogether because of their feeling of repulsion at what are termed natural attractions. Instead, the term "homosexual" has tended to become synonymous with that of "immoral", and later we shall see why. Again, too, no notice is taken of comments such as those of Wallin who writes: "Many homosexuals are

highly intellectual, idealistic, altruistic and just as devoted in their attachments as heterosexuals are in theirs. Their conduct in other respects may be quite irreproachable. This form of sex inversion occurs among geniuses and men of refinement."

We must now consider the different types in greater detail. First, then, come the active male and the passive female because, as compared with the passive male and the active female, their actions are simple to interpret.

The active male and the passive female are frequently the victims of environment. It is, indeed, a well-known fact that when the one sex is deprived of communication with the other, homosexual relationships often spring up. During a war this is especially observable when men are herded together in the trenches or at sea for a long period of time with their nerves constantly strained and with few facilities for ordinary relaxations. The women left behind, too, may keep company with each other for the same reason.

Nor is this conduct confined to human beings, for it occurs also in the animal world. Cocks deprived of hens make use of each other, the largest and strongest taking advantage of their lesser fellows. The same has been observed among dogs and cattle; and frogs are known to have attempted union with pieces of wood when the natural object was removed. This, however, is a purely transitory phrase and disappears when the circumstances are remedied.

Another factor which may produce a more permanent state of this same type of homosexuality is fear, ingrained from early childhood, of the opposite sex as the result of some unfortunate experiences. It is easy to imagine a young girl who, having been attacked by a sex maniac, becomes the lifelong victim of a fear of all men; or to

imagine a boy who has suffered from the bullyings of a drunkard and domineering mother, shunning women thereafter. Such persons when adult, would naturally turn for satisfaction to someone of their own sex whom they had no reason to fear. This is of course a type of psychological homosexuality, a purely functional disorder, that is a disorder within the limits of the structure.

Now, what of the active male who comes in quite a different category from the aforementioned, prosecution of whom for offences against boys brings him before the public eye? Here there is no question of a mere wrongly chosen object; it is lust pure and simple, nor is there any constancy or respect of persons; for such a man will force himself upon any boy or youth whom he may desire, causing mental and probably physical suffering. This type of homosexuality is akin to all those other kinds of sexual perversions which are anti-social and border on insanity. This is radically different from the types with which we are now dealing, for it is the essence of the latter that the person is normal in all respects save that of sex.

It is, however, because such cases have come before the public eye and only such cases, that so sweeping a condemnation has been made of all homosexuals, since very many people are unaware that any other kind exists. Therefore the terms "criminal" and "immoral" have come to be used regularly of a homosexual, all other distinctions being lacking.

Before we turn to the difficulties presented by the next great group, there is a point that might well be made here. The ordinary man who sows a few wild oats in his youth is not for ever an outcast from society; indeed, youth and wild oats are associated ideas. Yet the homosexual who sows a few wild oats in his own way in his

youth, and later desires to reform and restrain himself, finds great difficulty in reinstating himself among his fellows. He is branded for ever with a stigma, which is scarcely encouraging for one who is struggling against great odds.

It may, of course, be doubted whether the conflict within the homosexual is any harder than that of the normal sex problems with which anyone may have to contend. Perhaps the following paragraph quoted from Hermann Bang, himself an admitted homosexual, will help to show where the difference in degree lies:

"The first years of adolescence," he says, "to be sure represent the most difficult period for the homosexual. Most homosexuals have to pass through devastating struggles before they attain insight into themselves. . . . I have met men who have continued the battle into the fourth decade of their lives—amazed at themselves, strangers among strangers and without help."

This last phrase is revealing. The normal man or woman with sex problems is certain of finding sympathy and understanding and help from those around him; but with the homosexual it is otherwise. For him there can be no help except from those of his own kind, because those without his experience cannot hope to understand him even if willing to try. And the advice he may receive from such may be good or bad depending upon the type they are. But there is no final judge of this other than himself. Hence, critics would do well to remember Bang's phrase "a stranger among strangers and without help".

The second great group with which we have to deal comprises the passive male and the active female. Now except for those who become thus as the result of environment, and who are only temporarily diverted from the

proper object, this group is one of great complexity. For whereas the active male and the passive female do not transgress the limits of their capabilities, the passive male seeks that which he cannot receive, and the active female wishes to give that which she, herself, has not. Apart, moreover, from the actual sexual desires, both the mannish and masculine woman and the effeminate and feminine man enjoy the habits and occupations of the other sex far more than they do those of their own. In the case of the mannish and effeminate types, probably the only thing that is involuntary and due to some unknown factor is the primary desire to resemble the prototype as nearly as possible. The pursuance of the pastimes proper to the other sex is deliberate as the result of the force of this original desire. And because they are not quite natural in their role, which is one of imitation, much ridicule accrues to them; unjustly, however, because they cannot of themselves alter the primary desire. Yet there is always an incongruity between their appearance and their habits.

Psychologists in such cases lay great stress on early experiences and training; and it certainly seems probable that the nervous system itself, having been affected by psychological factors, creates an upset in the precise balance of the hormone secretions so that a malfunctioning occurs within the limits of the structure. Many endocrinologists assert that there can be no abnormality of this sort without a corresponding upset of the balance, and some psychologists tend to accept this view. Thus Gordon (*ibid.*, p. 18), writes:

“The internal secretions of the sex organs are largely connected with the development of the secondary sex characteristics. . . . The extent with which these secretions have to do with the establishment of the so-called psychic maleness and femaleness is hardly worked out,

but there is a certain amount of evidence to suggest sexual abnormalities such as homosexuality may depend on abnormal properties of glandular tissue belonging to the opposite sex appearing in the organism concerned."

It would certainly seem as if there were a difference between the effeminate and feminine and between the mannish and masculine which might be one of structure and function. Let us therefore go further into the question of misfunction within the limits of the structure.

When a piece of machinery is constructed it is constructed with an eye to fulfilling its function in the best possible way, and the very nature of its structure permits of its misfunctioning within certain limits. Let us take an example. A motor-cycle engine, if the timing is not exact, is apt to run backwards unless stopped and restarted, the spark not occurring at the right moment. Or again a wireless set whose reception is impaired by prolonged buzzing due to atmospherics or deliberate interference is not thought to be functioning properly. But both instances are of a misfunctioning within the limits of the structure. Unless the engine could misfire it could not fire, and unless the wireless could pick up atmospherics it could not pick up any sound at all.

Now the human body is as much a machine as any man-made contraption; it has its valves and its pumps, its sump and its fuel lines, fuel tank and generator; and equally it may be caused to misfunction by something outside its control. We know well enough that if we fill up with the wrong kind of fuel our digestive organs do not do their normal work, and we call it "eating something that does not agree with us". Since therefore we know also that experience may affect the nervous system and since there is accumulating evidence to suggest that the endocrines are somehow affected by the nervous

system, that the two are closely related, it is not difficult to believe that our hormone secretions are upset by wrong training or some early experience. The result then may be that a six-foot man of good physique will enjoy doing a piece of embroidery, housework, or attending ladies' tea parties, while a full-busted woman of ample proportions may have an Eton crop and will spend her time farming, shooting or horse-racing. And it is this incongruity already stressed which affords a justification for distinguishing these persons from those with whom we are now to deal.

Last in our division of types of homosexuals comes the feminine man and the masculine woman, those travesties of manhood and womanhood which are rare as compared with that above mentioned.

Such cases are usually apparent from youth upwards. There is the pretty curly-headed boy with pink complexion, who objects to fights, to mud and dirt and to sports, and who prefers to play with his sister's dolls. He may grow up into a man with narrow sloping shoulders, plumpish body, broad pelvis, scant hair and a high-pitched voice. The girl, on the other hand, lean and wiry, scorns dolls and girls' games, likes to play Indians and soldiers, and is ever ready for some risky adventure or a fight. She may grow up into a tall woman with broad shoulders, flat hips, small breasts, firm muscles and a low-pitched voice. Yet the male may have properly developed genitals and the girl may menstruate normally.

Now, most psychologists draw no distinction between this type of person and that previously mentioned. Yet there is a clear distinction. Where the one imitates and acquires, the other seems to develop naturally along the lines of the other sex. At puberty, as if by instinct, the girl will tend to take more and more violent exercise

as though her muscles were demanding to be developed. The boy, however, may become unusually sensitive as to his appearance, especially in the presence of men, and may begin to show a modesty unnatural to his sex in their presence. Invariably the cry is "I have always felt as if I were a girl", or alternatively from the girl comes the cry: "I always felt as if I were a man." In these instances the body may approximate in essentials to one sex, male or female, but the personality is wholly peculiar to the opposite one.

These people have the most difficult life of all, for they cannot conceal their forms from curious eyes and their peculiarities are for ever being forced upon them by the thoughtless persons who gaze after them and loudly voice the question: "Is that a man or a girl?"

Some years ago Radclyffe Hall published a novel entitled *The Well of Loneliness*. It was a penetrating title and the story was concerned with this subject, the life of a girl of this type, her difficulties and the attitude of others towards her. Had the book been handled with more restraint it might have done much as a popular novel towards bringing about an understanding of the situation; but unfortunately, as it was, it was banned as soon as published.

There is therefore at present no popular understanding of the situation, nor is any remedy offered that might do any real good. The psychologist's only suggestion is to make the mind fit the body, to which course such a patient will never accede. Thus a rift occurs between him and the would-be helper who cannot understand why, being really a man (or a woman as the case may be) he does not wish to be helped towards achieving the personality of such. The patient's answer is simple. He does not feel himself to be a man, and how would any woman

like to be turned into a man? So they arrive at a deadlock. The question therefore arises, which is the most important to sex, the mind or the body? Certainly both have to be set the same way in order that the male or the female may perform the function of reproduction. Unfortunately in such cases neither has the right emotional setting necessary for a union; and hence any such "natural" union is practically impossible physically in as much as it is impossible emotionally.

Moreover there is no certainty that we have here merely a psychological cause in that in these cases there is a tendency towards the tertiary characteristics and sometimes also the secondary characteristics of the opposite sex. There may therefore be some slight structural abnormality in the interstitial cells of the testis or in the ovary. There may be some weakening in the sex determining factor in the father (for which see next chapter). At all events it seems most likely that the cause is not to be sought in post-natal life at all but in foetal, since the child would seem to develop naturally enough if only he belonged to the other sex. This emphasis on foetal life I have since seen put forward by Clifford Allen (1939); but it would seem that progress here has been made but one step further, for there could be as great a variety of possible causes here as in post-natal life.

Nevertheless it would, indeed, seem that where an individual is able without any effort to pass, when properly dressed as a member of the sex to which he or she feels he belongs, but to which he is not recognized as belonging, there is some physical factor at work, for the average man and the average woman are not interchangeable personages but could be detected without difficulty if masquerading, either by appearance or by actions.

Now there is, for these people, no recognized form of treatment other than that offered by the psychologists; for what the patient asks, namely, that his body be made to fit his mind, is refused him. This, according to the psychologists, would be mere mutilation and, since it leads to non-productivity, therefore useless. But we have seen the latter objection of non-productivity is invalid since whether treated or left alone, such persons will not reproduce. Moreover recent researches have shown that possibly treatment by hormone injection might make a change, incomplete, it is true, and unproductive save in one respect (and that respect is after all the important one) namely, the achievement of a tolerably happy life for the individual concerned. But is not this an end worth striving after? Surely, where the mind cannot be made to fit the body, the body should be made to fit, approximately, at any rate to the mind, despite the prejudices of those who have not suffered these things, yet to suffer which they so readily condemn others. In individuals where the presence of mixed tissue or mixed organs is obvious it is the psychological build that should be consulted and not the predominance of any particular physical structure.

And if this point be conceded then another arises. Hormone treatment, whether for disease of the gonads, or for this purpose, is expensive. Surely in our post-war world we should see that all medicinal products are for international use and should be free to all sufferers.

It is obvious that the benefit conferred by society if it were unprejudiced, on such a person, would be reciprocated in two ways: in the first place, such people may quite happily pursue creative employments of one kind or another: art, mechanics, literature or science instead of for ever being hampered in their careers both by their

own selfconsciousness and the attitude of distrustfulness with which they are greeted on all sides, because they present something which the average man and woman cannot comprehend and therefore dislikes. Secondly, they would be relieved from the nervous strain imposed upon such persons, the constant self-control, the appearance of unconsciousness and impassivity and the attempt to draw as little attention to themselves as possible, all of which diverts a great deal of energy from the objects of their study or work.

Finally, the idea that the propagation of the species is the one aim and object of every man and woman is an exaggerated one. It is, of course, the aim and object for the majority of people since without it the race must perish; but it should also be recognized that in certain isolated cases there are individuals whose contribution to mankind is other than that of the reproduction of the species. Kant, one of our greatest modern philosophers, was a confirmed celibate. There are two alternatives, therefore: either change the attitude of the people so that such persons may regain their self-respect by not being considered freaks, or change the aspect of the person so that no one may know they are of that nature.

Until, then, people begin to realize the truth behind the appearance and accept it and possible treatment for it, even as they accept other physical abnormalities and their respective treatments, and cease to regard such phenomena as either sinful or disgusting, it remains only for such "homosexuals" to echo those words of A. E. Housman:

"How am I to face the odds  
Of man's bedevilment and God's,  
I, a stranger, and afraid  
In a world I never made?"

Do you remember Herman Bang: "A stranger among strangers and without help"? Do you remember Radclyffe Hall: *The Well of Loneliness*? Then remember also Housman: "I, a stranger, and afraid in a world I never made."

If God created them male and female, he also created them homosexual and heterosexual. Nor is this blasphemy. It is common sense for those who prefer to believe in individual acts of creation continually occurring rather than in one supreme Act as the result of which the world was set in motion to function according to certain laws of Nature, and within these limits to work out its own salvation. If a woman attempts abortion and produces a deformed child, do we blame God for it? Surely not, we blame the mother and attribute the result to the laws of nature. So also must homosexuals be attributed to the laws of nature. Why, then, must smug, self-complaisant people and psychologists whose knowledge is limited because they have not, themselves, entered into the experience of those persons about whom they presume so glibly to write, dictate to such what course they should or should not take. Is it not for the individual to judge whether he be "mutilated", experimented on or left alone? The world seems to think not, for whether he lives according to a rigid moral code of his own making, or whether he decides that people are not worth considering, he is given the same treatment; whether he deprives himself or indulges himself he is condemned and ostracized. Yet many of our greatest names in history have been homosexuals of one kind or another; and they have made their several contributions to art, to science, to literature, to strategy and to music. We should remember then that the ethical life of such an individual depends largely upon the treatment he receives at the hands of society.

Enough has now been said on this matter, suffice it to recall again, as in the first chapter, that passage from Scheinfeld:

“Viewed from any standpoint, the subject calls for more sympathy and understanding than is given it by the public and by the law. In the light of what little we already know, the hounding of homosexuals as criminals, classifying them with drug-fiends and insane, exhibiting them on the stage as freaks and subjecting them to scorn, ridicule and ostracism seems hardly in keeping with a supposedly enlightened age.”

## CHAPTER IV

### HERMAPHRODISM

THE word "Hermaphrodite" comes from the two Greek words Hermes and Aphrodite, these being the names given to a god and goddess who correspond to the better-known Roman deities, Mercury and Venus. The Greeks for religious purposes, constructed images that were half male and half female, having the head of the one and the body of the other, and these they called the Hermaphrodites.

The word has been taken over, therefore, to describe a phenomenon of nature which is neither male nor female, because it partakes of both sexes; not, indeed, having the head of the one and the body of the other, but, in general terms, having mixed sexual organs. Now, in the lowest form of life there is no distinction of sex, each living thing being the father and mother of its young. This happens in the case of many sedentary and parasitic animals and it is said to be almost universal among flowering plants. The next stage, of which the snail and the earthworm are representatives, shows copulation taking place, but with the partners each active and passive in turn. Amongst bees, on the other hand, we have the phenomenon of the workers, or unfertilized bees of neuter sex, as opposed to the drones or male bees and the queens which are the outcome of fertilized eggs.

At the level of the oyster, we have both sexes in the same individual, but not at the same time, for the oyster's sex life goes in cycles; having started life as a female it later becomes a male and may then revert to the female again. Above this point, however, we reach those creatures which are completely sex differentiated, that is,

they are the possessors of either ovaries or testes, and this holds good for man.

Yet even so accidents will happen; whether in the animal world or world of human beings, creatures are born every now and then which can be called neither male nor female; they are termed instead hermaphrodites.

It is necessary to diverge for a moment here to mention that the use of the word hermaphrodite and the distinction between true hermaphroditism and pseudo-hermaphroditism has been taken exception to by a recent writer on the subject, Cawadias, who in his vigorous and original book *Hermaphroditos* urges that the word "intersexuality" be used instead because, as he says, a male or a female may display characteristics of all degrees of intersexuality but can never be other than he was determined at the moment of conception, even though such determination may be completely masked and the true sex for ever unidentifiable. He would, therefore, confine the use of the word "hermaphrodite" to such low forms of life as, for example, the earthworm in whose body are active organs of both sexes always present, each worm in copulation both fertilizing and being fertilized. Hence he would have but two classes of intersexes, androgynoids (Greek: androi = men, gunai = women). or men with varying degrees of feminineness and gynandroids or women with varying degrees of masculineness. He would not, therefore, agree with the classification here given, although it has been generally accepted; but it would seem to be rather a difference in standpoint than a scientific disagreement, and those who wish to decide on the issue behind it should compare the two accounts for themselves.

He suggests further that the process of sex differentiation may still be in a state of evolution, that specialization

may not yet be complete. "Is it possible," he asks, "that while retaining the maternal organs the female continues to evolve towards masculinity as regards other features?" which question he bases amongst other things on the conception of man as the more complete specimen, evidenced throughout history by the fact that the mannish woman is recognizedly far less repellent than the effeminate man. The idea is not new, it dates back to Aristotle in the fourth century B.C., but it is difficult to imagine what such a product of evolution would be like or how she would perfect her functions. Certainly throughout the animal kingdom either the one sex or the other appears to be the more potent. As Cawadias points out, in the case of the scorpion and the black-widow spider it is the female that is the higher. In both species the male is killed by his mate as soon as he has fertilized her. The question, however, is too much one of speculation, but it does offer valuable food for thought.

Now true hermaphrodisism does not depend upon the shape or existence of the external organs, it is the presence of both ovary and testis in the abdomen that makes for it. And this presence may be characterized theoretically in four possible ways.

In the first place there is the bilateral type of hermaphrodisism which consists of four gonads in all; an ovary and a testis situated in pairs on either side of the abdomen where, normally, there is only the one or the other. Secondly, there is the unilateral type where there are three gonads, one ovary or one testis on one side and both an ovary and a testis on the other. Thirdly, it may be lateral, there being two gonads, an ovary on the one side and a testis on the other. Finally there is the possibility of an ovo-testis on both sides (an organ composed of cells of both gonads) or an ovo-testis on one side and a

normal gonad, either ovary or testis on the other. The first and second of these types are, however, very rare in the human species. Indeed, Morris Anatomy (1933) states that "no definitely authenticated cases of human bilateral or unilateral hermaphroditism have been described, but there have been a few of the lateral and ovo-testis types recorded in the literature." This statement may have to be modified, however, in the light of more recent research.

Usually cases of hermaphroditism cannot go very long unsuspected, for there is a retardation of normal development along the expected lines and certain habits and characteristics which belong to the other sex become evident. But this is true only of hermaphroditism proper. There is, however, a state which is far more common, that variety of freakish development embodying several forms which is known as pseudo-hermaphroditism.

In a book, entitled *Human Heredity* by Baur, Fischer and Lenz, there are the following three paragraphs which go far to explain the nature of pseudo-hermaphroditism. In the first paragraph they write:

"When an individual has exclusively male or female reproductive glands in association with the external characteristics proper to the opposite sex, we speak of pseudo-hermaphroditus masculinus vel femininus." The second paragraph runs:

"Most instances of what is called pseudo-hermaphroditism are nothing more than cases of high-grade hypospadias. The scrotum is split in two, the penis very small or entirely absent. Persons with this malformation are often wrongly supposed to be girls until the error becomes manifest at puberty. About one in three hundred of all males exhibit this malformation to a greater extent or less."

The type of person mentioned in the first paragraph

might be the male with no definite penis and undescended testicles and with accumulations of fat on the hips and breasts. Or, again, the female who, with two ovaries and a vagina might also be born with an elementary penis. It is, however, far more common in the male than in the female. But these types are rare as compared with the hypospadias mentioned in the second paragraph. Of this kind of malformation there are many degrees. In the least acute form the opening through which the urine flows may be situated, not at the tip as it should be, but at some spot on the lower surface. It may be placed near the tip, in which case it is of little moment, or at any point along the whole length of the penis to its base. When this latter occurs, urination has to take place as in the female manner, the urethral opening in the female being posterior to the base of the clitoris, the female homologue of the penis.

As we saw in the second paragraph quoted, there is, in addition, sometimes complete lack of a penis altogether, and this and the undescended testicles cause the parents to suppose that their child is a girl. As such, therefore, he is brought up—with disastrous results when the error is discovered at puberty, for at that time the voice may break, the muscles develop and the skeletal growth assumes adult male proportions. Sometimes, however, the changes are not so evident so that the individual may live for some years under the delusion that he is a female unless his instincts gain the upper hand. Cases are reported from time to time in our more popular daily papers of some “woman” athlete who “has changed her sex”, and these cases are most frequently hypospadias in whom the error was not discovered at puberty. Such an individual will naturally tend towards sports and athletics seeing that his muscular development demand

exercise beyond that usually required by women, and in feats of strength he can easily beat his rivals.

There is a case described of a "girl" who, in her early twenties began to realize that in bodily formation "she" was not quite like other girls. She had no breast development and had never menstruated and had slightly more than the normal proportion of hair growth. After treatment, "she" was able to assume the character of the man she had always been. Further, she became married to the "friend of her girlhood days". We may, therefore, suppose that "her" sex instincts had always been male and what the world would have previously called a homosexual attachment to another girl was really a normal heterosexual one all the time.

This question of the ultimate predominance of the male instincts is an interesting one, for some cases have been reported in which they have failed to assert themselves. Certain patients who have realized that they were not the same, physically, as other girls, have been horrified to discover that in reality they were men, undeveloped males. Some such cases on record refused treatment, preferring to go on living as women, and, being without external genitalia, they are outside the scope of the law and have a perfect right to do as they wish. One case reported, indeed, felt so strongly on the subject that "she" even adopted a child to give added credence to the fact that "she" was a woman. The problem is whether it is environment and training which overcomes the normal instincts or whether, in some cases, there is too great a deficiency in testicular hormone and in others a deficiency less marked. The contradictory evidence that we have helps neither way. It is hoped that future research and experiments will provide some answer, for it is of importance to the subject of the relation of the mind to the body.

We have remarked above that disastrous results occur when the mistake of upbringing is discovered at puberty. In the condition itself, however, there is nothing disastrous, the trouble for the individual lies in the treatment accorded to him by his associates when he emerges from a hospital a man, having apparently entered it as a woman.

In the extreme cases where the urethral opening is at the base, even when injections develop the penis three or four inches, it remains useless as a medium for passing urine in the normal manner. Since, too, the testicles may refuse to descend, the patient, if he has not the time or the money to continue a prolonged course of treatment, emerges from hospital unable, any longer, to pass as a girl and with the very difficult task of convincing people that he is really a man and could never be a woman despite his obvious deficiencies. If he cannot urinate with other men, and if he does not resemble them physically in every respect, it is not surprising that his statements are met with some incredulity—chiefly because most people are unaware of the possibility of such a state existing. They may never have been given real cause before to doubt his sex was female, why should they alter their view now? Far easier to assume that, by pure perversity, he has wanted to change his sex and that by some curious means he has managed to accomplish a pseudo-alteration.

The idea that it is a change of sex that has taken place, is further propagated by the popular press who seize upon the story and announce it in large headlines as if it were a miracle, while no regard is paid to the enormous difficulties that beset the patient, which difficulties are only increased by a false account—or, for that matter, by any account at all being given. The printed word conflicts with his own spoken word so that his associates

are even more incredulous; for the newspapers print exactly what they, themselves, have been thinking.

This attitude of the public calls for some digression. It is, indeed, strange how few people, because of this defect in the education of the citizen, will believe the facts. They prefer to think evil of the person rather than accept the truth. Even, they may go so far as to accuse "her" of having been in trouble with some man and of having sought this way out of it. There are, of course, more enlightened people who cannot conceive of such ignorance and stupidity in others, and these may doubt that the pseudo-hermaphrodite has such difficulties to face. It is, unfortunately, only too true, however, and hence more time will be spent on this matter to show those limited in experience just how futile such accusations can be.

No normal woman who was capable of going through the process necessarily preparatory to childbirth could attempt a change into the opposite sex. (There is the possible exception of some ovarian tumour or atrophy caused by the childbirth which might upset the hormone balance, but this is a very rare occurrence in humans, although it is not quite so infrequent among poultry.) All instances that have been quoted here have been of men and women with the psyche of the opposite sex which inevitably bans all thought of intercourse. We have seen how the first symptoms of a woman with an adrenal tumour was the obsessional fear that she was turning into a man. And this would be the normal reaction of the average male or female to such a proposition. If, for instance, such an operation were forced upon a woman, the mental conflict she would endure would be sufficient to send her to an asylum in the end. It is essential to the success of such an operation that the

whole of the psychological part be supporting and assisting it. According to psychologists the threat of castration, alone, is the cause of a large number of repressions and complexes, although it is unlikely that this threat is as prevalent as they think. But it is certainly well enough attested that loss of one or both breasts has so great an effect upon a woman's mental outlook, that it has been found advisable to make artificial breasts so that the patient may have her self-confidence restored to her. Is it, therefore, reasonable to suppose that any previously normal woman would go to such lengths to evade trouble of a sort that is, after all, only too common?

If, on the other hand, there is an incompatibility between the mind and the body, either the body must be made to fit the mind, as we have said, or the mind be made to fit the body; and that is for the patient himself to judge if he be of age. Where, however, the mind and the body are compatible, attempts to reverse the one or the other are certain to end in disaster. Hence, the futility of the type of accusations mentioned against those who "change their sex". No apology will be made for this lengthy digression, for no digression would be too long if it did but serve to efface, to some extent, the prejudices that surround the topic.

To return to our main subject, hermaphrodisism and pseudo-hermaphrodisism is now fairly universally considered to be a phenomenon of heredity. Baur, Fischer and Lenz, in the book quoted above, add to the previous paragraph we quoted the sentence: "These kinds of pseudo-hermaphrodisism in which masculine and feminine characteristics are variously mingled are, beyond question, hereditarily determined." Indeed, many think that homosexuality is also hereditarily determined, so that it would not be out of place here to consider briefly and as

simply as possible the part that heredity plays in sex-determination.

Now, we all know that the conception of the child is due to the union of the ovum in the mother with the sperm of the father. This, as we saw, is the procedure after a certain stage has been reached in the evolutionary process. Both ova and spermatozoa contain what are called chromosomes or coloured bodies. (Greek: chromos = colour, soma = body.) In both sexes in man, the chromosomes number forty-eight, and of these forty-eight twenty-three pairs are identical. A difference, however, occurs in the twenty-fourth pair. This pair in the male is the sex-determinant.

It is now known that it is the father who determines the sex of the child, so that not only does the twenty-fourth pair in the male differ from the twenty-fourth pair in the female, but it also differs in itself, the one chromosome from the other. In the female the two chromosomes in this pair are identical and to them has been given the symbol "XX" by geneticists. The male's pair has two symbols, one for that chromosome which corresponds to both in the female—this is also termed "X", and one for that chromosome which is unlike the others: and this they call "Y". The significance of this will be clear shortly.

Chromosomes are small rod-like objects within the cells of the body, which stain readily with aniline dyes. "Small" is, of course, a misleading term, for they are invisible to the naked eye, and they are more readily conceivable when it is remembered that some 200,000,000 sperm cells, each containing twenty-four chromosomes, enter the woman's body whenever there is a union of the two. When a sperm from the male containing the "X" part of that chromosome pair which is the sex-determinant

meets the ovum which is inevitably an "X", the embryo produced will be what is called an "XX" type, and every "XX" embryo is a female. On the other hand, if it is a "Y" chromosome which survives the journey to the ovum, the embryo produced will be an "XY" type, and that is a male. Thus, the sex of the child is determined from the moment of the meeting of the man's sperm with the woman's ovum, that is from the moment of conception.

But "X" and "Y" chromosomes are not, however, considered to be the arbiters of heredity, although they are the basic determinants of sex. The chromosomes in turn contain "genes". The word "gene" has been given to something, the nature of which is not yet properly understood, but it is agreed that it is these genes which transmit fundamental characteristics. And a change in a gene, which is called a "mutation", may be responsible for some developmental improvement in the species. It may also be responsible for degenerative changes, diseases and other abnormalities. How a mutation is brought about is not yet properly known, but when an impaired gene for instance is contained in any of the chromosomes of the one or of the other sex which meets the corresponding chromosomes by union, some hereditary taint may be transmitted to the offspring. But it must be remembered that for every chromosome that has some tainted gene, there will be another with an unimpaired gene. Thus hereditary defects are produced in some members of the family and not in others.

Yet not even here does the story end. The characteristics in the gene may be either dominant or recessive. That is to say, certain characteristics are of such a nature that they will always come out if a gene containing them is itself contained within chromosomes of the cell which fertilizes or is fertilized. Such characteristics are said to

be dominant. The opposite type is the recessive gene which will only appear if it combines with a chromosome containing another similar impaired gene, so that it is doubled or supported. Recessive characteristics may therefore be passed down without becoming apparent in members of a family until they find such support.

Our knowledge of genes is regrettably scanty, due mainly to the fact that they are so minute, but in recent years they have become the target of scientific curiosity. One point of great interest is the fact that a gene may control the development of more than one organ, which organs are not *apparently* related in the body—apparently, because the possibility is inevitable that future research will show that there is a connection perhaps through which diverse areas are linked, and if this is so, eliciting the causes of disease and the diagnosis of symptoms may be considerably altered in the future. One such instance has already been established, for it is now known that the same gene controls the development of the eye and the reproductive organs—at opposite ends of the body and not obviously connected either structurally or functionally. But in the medulla oblongata, that part of the brain which unites the midbrain with the spinal cord, through which all nerve tracts to the brain must pass, the nerve centres for the reception of visual stimuli lie in close proximity to the nerve centres of the sex organs. Now this discovery has had practical results, for eye trouble and headaches sometimes can be correctly diagnosed as being due to disease or damage of the reproductive system, whether it be a displaced uterus, a fibroid growth or tumour of the prostate.

These genes then contribute a variety of characteristics to the child, which characteristics may appear in the next generation or may lie dormant for one or more genera-

tions; and there must be certain characteristics transmissible thus which affect the behaviour and sex life of the individual. These, however, cannot be such characteristics as are acquired by a person in his lifetime, for it is generally agreed that these are not transmissible. On the other hand, the tendencies which may produce the acquired characteristics are transmissible.

The question of tendencies is an important one, for it suggests the complete potentiality of the individual from the moment he is conceived. He may have most of those tendencies which his father possesses, or most of those his mother has; and he may have counterbalancing ones of his own besides, so that for instance a drunkard and wastrel father may have a strong-willed son whose tendency to drink is overcome by a better developed tendency towards self-control. Just how such tendencies are developed into virtues and vices in the absence of any similar ancestral tendencies is a mystery.

The subject is important because for a long time it was thought that acquired characteristics could be transmitted although no causal connection could be determined, and the idea has still not completely died out. This was the theory put forward by Lamarck (1744—1829) at the beginning of the nineteenth century. A giraffe, he thought, had acquired its present long neck as the result of its distant ancestors stretching to reach slightly higher leaves, this process continuing over numberless generations, the giraffe offspring in each case being born with a neck just a little longer than that of its parent.

Darwin, however, modified this view in his theory of Natural Selection. A mutation occurred, he maintained, in a certain giraffe for example, as the result of which it was born with a neck slightly longer than its brothers'. In times of scarcity it survived easily because it could

reach food which the others could not. Moreover, since the characteristic must have been produced by a *gene*

of normals as there appear to be. So much may happen between the time of the conception of the infant and its birth, and so much may happen in its early years, and so much may happen to it in adolescence and again as an adult, that those people who have had no difficulties of an abnormal kind to encounter may consider themselves fortunate rather than virtuous and may, in time, with growing understanding, learn to help and not condemn those less blessed.

## CHAPTER V

### ON PERSONALITY

THE question of the relation of mind to matter is one that has puzzled thinkers from the earliest times. The very act of thinking about the objects of the external world implies this problem, and there have been numerous philosophical theories, some contradictory, which try to offer an answer. As yet, however, the greatest thinkers of every nation have been thwarted by a conundrum which seems insoluble. Nor does this problem confront philosophers only. Scientists also meet the same question in a particularized form, namely, that of the relationship of the mind to the body; and although much evidence has been collected to show that somehow, by concentration and will-power the body can to some extent be controlled, yet no general rule has been discovered to explain how a certain people have this ability or what is the nature of this ability. Further, although we can all recognize personality, only the loosest thinkers would have the temerity to offer a definition or even a description of it.

There are, it is true, a number of books written upon the subject under the title of Personality or Mind which, however, carry us very little further forward. Why? Because the most the writers can ever do is to give certain facts collected from their own experience or that of others with whom they have been in contact, directly or indirectly. From such facts and observations they discuss types of persons; that is, they deal with particular cases under cover of dealing with general instances. This seems illogical, for, above all, the individual is not a type. There may be certain features which a variety of people

have in common, but to select one single feature out of the complex which goes to make the individual and on the strength of that to allot him to a class, is a practice which has little to commend it. Yet, it seems, that it is on this very system that modern psychology is based.

Now, when the study of Psychology first developed in the sixteenth century, it was intended to fill a gap in the pursuit of knowledge, a gap that had been left open since the days of Aristotle. For whereas Medicine studied the body and Philosophy studied the mind as a thinking entity, there was no science which dealt with the emotions.

Hence, in Germany, this new method was begun, but in the course of time that science which was so essentially one and a whole, broke up into three parts which became respectively psychiatry, psycho-analysis and psychology. Of these, psychiatry deals with the lunatic and criminal mind, psycho-analysis with what it terms repressions and complexes, and psychology had become a specialized branch of philosophy—what might be called mental philosophy as opposed to moral or political philosophy, theology and logic. This division of an integral whole has slowed up considerably the rate of progress that might have been made, for the first two subjects have become compartments which, though showing promise, have inevitably become bound within the four walls of their own basic hypotheses, so that without an outlet their exponents can do little more than raise the height of the walls while unable to extend the area of the enclosure.

Now since psychiatry is a medical subdivision it does not concern us here; and since psychology proper is truly philosophical we shall consider its point of view later when dealing with the Person. For the moment, therefore, let us turn our attention to psycho-analysis and remedial psychology which, as the result of its severing its con-

nection with the parent tree, lost sight of two important points, the first being that the individual is not a type and the second that "Ignorant of troubles, I cannot learn to help those in need".

Part of a psycho-analyst's training is that he, himself, has to undergo a course of analysis. By the time his training is finished he has mentally furnished certain compartments neatly labelled with the names of different complexes, repressions and neuroses. Thereafter—unless we do him an injustice—the symptoms and signs of the patients that come to him are filed in the compartments to which they most nearly approximate and the patient is said to be of this or that type. Now this procedure is only valid if the patient's trouble is one that dominates his whole life and not merely a small part of it, and dominates it in such a way, moreover, that he becomes anti-social or asocial or impairs his own health.

Practising psychologists, as opposed to psycho-analysts, follow a similar method inasmuch as they interpret their patients' recounted feelings in terms of certain preconceived notions of repressions, and then presume to tell them the whys and wherefores of their feelings, relating them frequently to the experiences, not of the patient, but of the psychologist's own. Let us take an imaginary but typical example. Let us suppose that a man is so painfully shy and awkward in the presence of women that he is persuaded to seek "professional" advice. As the result of the preconceived notions with which the psychologist is imbued, the tendency is for him to conclude instantly that the man is unconsciously repressing a desire which horrifies him, for licentious contact with the other sex, and the repression, therefore, takes this form. It might, of course, be true in one particular case, but what is objectionable is this tendency to jump to

such a conclusion in the majority of cases. It is, indeed, the heritage of Freud and his Œdipus Complex theory, but it seems that the more amateurish and enthusiastic the "psychologist" the more apparent the tendency. The danger, moreover, is that ideas are put into a patient's head that were never there before, and if he or she is susceptible the damage may be incalculable. Hence the responsibility of such a practitioner is very great, since for every case he may diagnose rightly, there may be many others which do not fit into their compartments.

Most psychological upsets have a very slight origin and are of a nature which is common to men as a whole; they may vary in degree through circumstances, but more often it is the circumstances that require to be dealt with rather than the "neurosis". If a man is born with an affliction of whatever sort or however slight, he will not become self-conscious about it until its presence is forced upon his notice by his thoughtless fellows. Then he will start to worry and its importance will become magnified beyond what is reasonable, until finally it may amount to an obsession, to forget which he may go to any lengths.

Seldom, indeed, is the suspected attitude of one's fellow-men to oneself ever purely imaginary, usually it has some basis in experience, after which, however, it may be exaggerated and thought to exist where it does not. But does it not seem short-sighted to assert without hesitation, that the trouble in every case is solely in the man's mind? Yet, this is the premise, apparently, of most modern psycho-therapy, too little regard being paid to surrounding circumstances.

Now, the best psycho-therapist is not necessarily the man with the highest degrees, nor the man who has read the greatest number of appropriate works, nor he who is

well versed in the history of the subject, nor he who has had the most patients, nor he who has written the most books. It is often the man, qualified or unqualified, who has, in his own past, had the widest experience of life in all its aspects and has, himself, passed through and surmounted a variety of troubles. He upon whom sadness and worry has left its mark; he who can remember his childish reactions, its hopes and its fears; he who can recall the exaggerated importance of his adolescent problems, who does not forget the more straitened times before the days of his prosperity. He who has been hit by fortune and has yet won through. For most of the eccentricities that people develop come from ordinary difficulties and troubles with which they do not know how to cope, so that they either find a refuge from them or adopt some stitute to hide their deficiencies.

It is a platitude that if we have not had a certain experience ourselves we cannot enter fully into another man's feelings over it; our understanding of it must be purely academic. How then can one man advise another in such circumstances? It is essential that an experience recounted arouses in the listener visual memories of himself in the same situation, so that he can understand perfectly how the other is feeling. Then, and only then, is it likely that his help may prove adequate. A vocational clergyman who has never been troubled by doubts will have no sympathy for the agnostic. A man who has never been in need cannot understand properly the feelings of the man who is starving. The heterosexual is unable to enter into the mind of the homosexual. The prosaic man fails to comprehend the sensitive or artistic temperament. And so the clergyman measures the recounted experiences of the agnostic against his own doubts upon the theory, say, of Neo-Platonism; the well-fed man against his

hungriest moments; the heterosexual against his own sex difficulties; the prosaic man against his appreciation of a classic work of art. In each instance, therefore, what is compared differs from that to which it is compared. Nor do the standards vary only in intensity, rather they are different in kind. The recounter meets with frustration because he fails to find phrases which his listener can comprehend and there is a lack of harmony between the two minds.

We may well ask, therefore, what qualifications a psycho-therapist has to advise with regard to the wide variety of cases that come before him. What does he know about the manifold aspects of life? Surely, only what he learnt as a man as well as a psychologist? It may, however, be argued that it is not necessary for a doctor to have had all the diseases which he claims to be able to treat—if it were, to whom would expectant mothers turn? But this is a fallacious argument; the analogy is a mistaken one. A doctor has to deal with things concrete, things he can handle and examine through the medium of the five senses, but the psycho-therapist is dealing with things abstract. He cannot make contact through the senses. His only means is to enter into the mind of the other man; and for this we maintain he must have had a similar type of experience—and it must be remembered that the experience of the dentist's waiting-room is far removed from that of the dentist's chair.

Now, diseases of the mind that make men anti-social are admittedly within the scope of the psychologist's treatment, for he must have far more second-hand, i.e. academic, knowledge of them than has the unqualified man who usually has none. But it is the very fact that a comparatively large amount is known about the abnormal mind and little or nothing about the normal, which is the

crux of the matter. By normal, we mean within a certain range, for there is no absolute normal as regards anything at all. Hence, because of the wide variation possible, it is experience that counts in the comprehension of our fellow-men, since every individual is so different from every other. Therefore, knowledge, as far as it is possible, of the extent of the normal makes us better fitted to help those in difficulties than does the most thorough knowledge of the scope of the abnormal for, as has been said above, most eccentricities in our behaviour have some very simple origin and they are not assisted by being regarded as repressions and complexes.

Since so little scientific research has been done on the normal brain, then, it will be necessary to gather up from various sources, but chiefly from one's own experience, all those abstract entities which seem to be present in MAN, an imaginary person who may be said to be the lowest common denominator of all individuals. And while gathering them let us not forget the observations already made upon the physical side of man, especially those parts of us which seem to have a direct or indirect influence upon our characters and our "personalities".

The division of the mind into imaginary compartments is no new one, and it is a device that is of great convenience for the better understanding of the individual, provided it is always remembered that the division is purely imaginary inasmuch as the mind, being something of an infinite entity although attached to the finite, can be divided and yet remain indivisible, a paradox which is true only of that which is not bounded by space and time. Hence, by dividing the infinite is meant viewing it from different aspects.

As long ago as the fourth century B.C. Plato, made what he termed "the tripartite division of the soul", that is,

he maintained that the soul—or the mind—had three parts, a rational part, an “angry” part, and that part which is the seat of the animal desires. If, therefore, following modern thinkers we substitute the emotions for the “angry” part, we shall have an outline that will serve as a basis for a more detailed survey.

It should be clear that this is fairly comprehensive, for other mental activities, such as memory and imagination, are embraced by the rational part. Let us, therefore, begin with that part which is an inheritance of our evolutionary process, that which we have also in common with the animal world, the desires. It is this part which holds us back so frequently from attaining the heights we could will ourselves to reach, and which prevents man from becoming superman. It seems as if we can never ignore it, though we may do something to subdue it and, indeed, most of the conflicts within us are between this lower part and the later evolutionary parts, the reason and the emotions.

The desires, indeed, are in direct contact, as it were, with certain of our physical organs. They may be said to be a mental awareness of messages sent to the brain by the body or, better still, they are the arrival of such messages at the appropriate part of the brain. The most obvious example we can take is that of hunger, the desire for food. Hunger is, itself, really the result of an internal secretion which comes into being when the body is in need of nourishment and which stimulates certain nerve-endings which, in their turn, carry the stimulus to the brain. There it is translated into the statement in human beings: “I am hungry”, but in animals the translation is into actions such as pacing up and down where the animal is caged, or to the assumption of the hunting posture in the wild.

Now this is the most basic of all the desires, and one that dominates even over that of sex, though psychologists may hold a different view. Yet the seeking of food is surely both temporarily and logically prior to the call of sex. There are a large number of other desires also, secondary to these, which can all be traced to chemical stimulation of the nerve-endings, and this is an interesting point for the higher the mind develops the more it tries to shake off, apparently, the influence of the body, as we shall see immediately. Such lesser desires include the seeking of shade from the heat and warmth from the cold, the scratching of an itching place or rest.

We now come to the second division, the emotional part, but the further we move away from the body the more uncertain becomes the ground upon which we tread. We all know what emotions are from our own experience and we have an elementary form of them apparent in animals, but it is very difficult to explain them. They seem to partake of both the rational part and of the desires yet they seem also to be far removed from either. Perhaps on the strength of this observation it might be valid to infer that there are two main kinds of emotions, those which are not wholly indifferent to the existence of the body and those which seem to be quite independent of it. Moreover, it might be true to say that the former are of an earlier evolutionary type and are common also to the animal world. With these, therefore, we shall deal first.

The symbol for grief, we know, is tears which are the product of tear-glands in our eyes, and they may be produced by other things than an apparently abstract sensation, namely tear-gas, hay-fever, excessive laughter or onions. Similarly, too, laughter may be effected by tickling or a nervous disorder as well as by a humorous

situation. Anger also may be of a primitive type roused by injury or deprivation, but it may be a state of righteous indignation and here we seem to approach the borderline between the two kinds of emotions.

The higher kind, on the other hand, might almost be called the "altruistic" emotions. Sympathy, loyalty, pity, "charity", annoyance, resentment—all these might be termed altruistic in the sense that they are aroused in us by the understanding of an "event" for which some external agent is responsible. So far, therefore, as they depend upon understanding they pertain to the rational part, and so far they are quite different from the lower emotions, if we may call them that.

Now, upon the emotions depends to a great extent our characters and we are inclined to class our friends and associates in accordance with which emotion is predominant. Quick-tempered, easy-going, moody, erratic, irritable, jealous, generous, sympathetic, are all epithets we use from time to time to describe people with whom we are acquainted. It is, however, regrettable that we know so little about the normal mind that we cannot say what causes one emotion to predominate over the rest and so to create a "disposition" as it is sometimes called. It is true that for many centuries there has been a tendency to put the blame or the credit, as the case may be, upon certain of the internal organs: the four "humours" of the Greeks are famous. More recently, too, there has been an attempt, as we saw before, to quote dispositions in terms of endocrine predominance, and from time immemorial our worst emotional upsets have been attributed to the heart. Any conception, therefore, that has as long a history as has this one—the first reference to it, perhaps, occurs in the works of Homer written more than 2500 years ago—must not be discarded merely

as an old wives' tale especially since the latest scientific thought, now more cautiously, however, would find a connection between the endocrines and the temperament. But for the present we shall have to content ourselves with asserting that some of our emotions are directly influenced by our physical parts and that those which we have termed altruistic are of a different type or are influenced by organs of a different type.

Now, although the question of the relationship of the three parts of the mind is one that must come later, it is appropriate here to consider one point, namely, the variability of the individual in respect of what we happily term "the weaknesses of human nature". Why is it that on one day we may be more likely to gain a favour of some person than on another, so that we wait for what seems to be a propitious moment before approaching certain people? Is it a matter of the emotions warring with one another so that one day one emotion is predominant and another day another?

It would seem that there are two possible answers to this, both complementary to each other. In the first place our bodily situation which varies somewhat from day to day may account for a lower emotion dominating a higher and more constant one on certain occasions. Mention has already been made of the physical signs apparent at times of strain upon the nervous system, and these times of strain are closely connected with the emotions. If we were incapable of feeling sorrow we should never feel hungerless with grief nor sick with worry—two comparatively common states with the normal person. Emotionless people do not sweat with fear, nor does their hair rise in horror, nor do they become irritable—they remain impassive throughout every kind of crisis, but, fortunately, such persons are few and far between

and on the rare occasions we may meet them we term them inhuman—so much store do we set by the emotions as being especially a human attribute. Hence, the connection of the emotional part of the mind with the body is so close that it is reasonable to suppose that its effect upon the lower emotions is sufficiently strong that they, in their turn, overcome “our finer feelings”.

The second answer lies in the possible influence the desires may have upon the emotions. Plato, himself, postulated a conflict between the desires and the “angry” part and, indeed, since the desires were developed prior to the emotions, it is clear that that which has held sway the longest will tend to dominate newer developmental processes. On some days therefore for one reason or another the higher part may be deliberately repressed by the animal part, so that whereas on one occasion we may react suitably to a situation, on another we may revert to a more primitive form of response. Yet, again, it is likely that in the first place the desires are affected by the body so that we have the same source operating along two possible channels, the desires or the emotions.

We now come to a consideration of the rational part, that highest and latest-developed part of all. Hitherto we have dealt with feelings whether of desires or emotions and feelings are pre-eminently something which involves the whole self, they are a subjective and passive state of mind which manifests itself in one way or another in actions. On the other hand, a thought is a mental activity concerning some object of which the thinking entity is no part. This may sound strange when we consider we are able to study our own selves but not when we realize that even when studying our own selves that part of us which is engaged on such a study is the very active thinker and itself unstudyable. Thus, whether the object

of our thoughts be our own past thoughts or experiences or some thing in the external world, that wholeness of ourselves which is so essentially present in feeling is absent in the thinking act in which only the residuum of the ego is present. In fact, in a sense thought may be described as objective and feeling as subjective, thought as active and feeling as passive, thought as partial and feeling as all-embracing.

The rational part, itself, may be divided into three types according to its objects. First we may think about the objects of our sense perception, the things we touch, taste, see, hear and smell. Or it may concern mathematics which are partly sense-perceptible in as far as we learn that 2 chocolates + 2 chocolates = 4 chocolates, and partly abstract in as far as we pass from this understanding to the comprehension of the universal statement that  $2 + 2 = 4$ . Finally it may become purely abstract and may be the contemplation of such conceptions as Time, Space, Causality, Mind, Matter and God.

The first or lowest level of thought is common to all men and probably also to most vertebrates. In the animal world, baby world and among low-grade mental defectives it would seem probable that it is a matter of image-thinking for thought as we know it involves language and language in such is absent. Yet in a sleepy or mentally tired state we not infrequently, ourselves, indulge in picture thought, for it serves where there is no need of communication and is less energetic. We cannot conceive of a baby thinking the word "food", but we can imagine it conjuring up a mental picture of a bottle and crying for the actualization of that picture. Now, since man could not pass on to other people the pictures he had in mind when he first descended from the trees and found a cave, it became necessary to have a sound that

could be communicated and which would correspond to the image whether mental or actual. And in all elementary languages the small vocabulary is devoted almost entirely to sounds for ordinary objects and activities and to simple mental states. For the most part, of course, we do think all our everyday thoughts in language rather than pictures, except on the occasions mentioned, from habit and because pictures are inadequate. This level of thought, therefore, concerns everything in our daily communal life, the food we eat, crossing the road, the cut of our clothes, the welfare of our children, our friends, our job and our pleasures.

The second level of thought is less universal proportionately as it is higher, for the element of the abstract in it shows an advance in the evolutionary development of the rational part, and it is of interest that it is the intelligence tests which deal with simple money problems that are most frequently failed by high-grade mental defectives who, if looked after in this respect, are excellent workers in many cases, but are unable to cope alone with our complicated economic situation so that as citizens they fail.

The highest level of thinking is again considerably narrowed in scope to the few who have both the ability and the opportunities to indulge in the lengthy mind training that is a necessary prelude to progress in this sphere. Indeed, the occupation of the philosopher and abstract thinker is all too often laughed to scorn by those whose immediate concern is the acquiring of the luxuries of life. Those who are interested in the attitude of the man of the world to the thinker could do no better than to read the famous Myth of the Cave in the Seventh Book of the "Republic" of Plato. Though written so long ago, it still stands to-day as true as ever.

As regards the inter-relationship of these three parts, it is obvious from our own experience that now one part and now another predominates. Reason may act as a check upon the emotions or upon the desires, for it can deduce, infer, foresee and assess; but because it is a later development it is seldom so firmly established that it can withstand in every instance the antagonistic elements in the other two parts, consequently we often do things contrary to our better judgment. "The good which I would I do not and the evil which I would not that I do." Similarly, too, the relation of the reason to the emotions is one of alternating dominance. The two phrases of "the heart ruling the head" and "the head ruling the heart" sum this up perfectly.

It is, however, very difficult to imagine why, in spite of ourselves, even in the very act of admitting it we act upon our emotions instead of our reason or judgment, and this in a way that may give no particular benefit to ourselves. For instance, any person at all imaginative has surely had the experience of feeling compelled to glance nervously over his shoulder in the dark after an evening spent with an especially exciting ghost story or thriller. Yet all the while he may be assuring himself that there is nothing there, can be nothing there, and that he has traversed the same passages a thousand times before—but he must needs look just the same. Or again, in the matter of anxiety, reason tells us that there is nothing we can do but wait and that worrying will not help and will only impair our strength—yet we continue to worry. Why?

Here we have a different kind of problem and to say that the emotions being a lower level of mind have a hold upon the later developed part offers no satisfactory answer. For in the former instances we are confronted

with a deliberate rejection of the higher thinking and the deliberate acceptance of the lower. Here, on the other hand, the deliberate element appears to be entirely omitted. There seems, instead, to be a compulsion outside our control with which reason cannot cope. Now in some cases where the emotions overcome reason we can trace the aid of the desires in their victory. Sometimes we *want* to be alone with our private sorrows, we *want* to continue to feel resentment, we *want* to worry—at least we should find this to be so if we were really honest with ourselves. But such a solution can hardly apply to the question of “nervousness” as outlined above, so that this problem still remains with us.

The rational part has been divided into three in accordance with the objects of thought. There are, however, three other mental activities which are within the scope of this part but which are different in essence from ordinary thought, and they are: Memory, Imagination, Will and the Moral Sense.

Of the first two there is little to be said here, for they do not have any apparent significance from the point of view of character, although they are both important to the individual in as far as he is an individual. There is, indeed, a connection between imagination and the emotions, for the emotionality of the person will depend to a great extent on his imaginativeness. But the subject is too big and would take us too far afield to deal with here.

The Will might be termed Rationalized Desire, for though it seems to have much in common with the desires in the way it moves a man to action, yet it seems to differ radically from the animal part of us as, above all, since that part is unreasoning and, indeed, might almost be called instinctive because at some point the

instincts and the desires merge into one. Another difference which finally separates them from the Will, however, is that we not infrequently do something "we do not want to do". There is little need to explain this further, it is too common an event in all our lives, as also is its converse, not doing what we know is the obvious thing to do; hence, when the more recently developed part, Reason, succumbs to the old and firmly established part, the desires, we act foolishly even while cursing at ourselves for being such fools. It would seem, therefore, that the strength of the Will is proportional to the amount of intelligence of the individual, for to be strong-willed must be to have a certain amount of rationalized desire and the extent of this rationalized desire depends upon the degree of intensity of the Reason. Hence, men of character and personality, the effects of the driving power of the Will, must also be men of intelligence. Unfortunately, the converse of this, that men of intelligence are also men of character, is not apparently true, as we shall see presently.

The concept of "conscience" or the moral sense is a popular one despite the fact that some people are wont to dispute its existence and to postulate, instead, only desire of reward and fear of punishment as the basis of all morality. This, however, has never found a very wide following perhaps because the ordinary man does not feel it is true of himself. Moreover, the popular concept would link morality with rationality for the law only recognizes rational people as being responsible for their actions. We do not, these days at least, censure infants, lunatics or defectives for the things they do, we merely try to prevent them from doing more harm than necessary; we keep a check on them but we do not punish them.

Now, conscience or the moral sense is not identical with reason, nor is it reason applied to a certain sphere. For

the one thing conscience cannot do is to judge. Judgment is the property of reason alone, and it involves deduction, inference, comparison and assessment. Sometimes it seems as if conscience works without any preparatory judgment—we refrain from certain actions for no particular reason we can think of, but because we “know” them to be wrong. Possibly, of course, this “knowledge” may have some basis in unremembered experience. More frequently, however, even while conscience is active, our reason is explaining why we should or should not do this or that, and when we have acted contrarily to such dictates conscience continues to recriminate while reason continues to give explanations of why we should not have acted thus. Hence, conscience asserts and reason gives the grounds for the assertion.

On those occasions when we try to justify to ourselves our actions while knowing them to be unjustifiable, we employ a false reasoning or a reasoning based upon false premises, the premises being, in such cases, usually statements concerning our motives: “I only did it because . . .” is the customary method of starting the argument.

The moral sense, then, lies within the limits of the rational part of the mind; further, the higher the level of the mind the more moral it should be. But here we come up against the problem of the brilliant man of letters or of science who, apparently, is utterly unscrupulous in his dealings with his fellow-men. On the above statement, surely he should be the more moral as he is the more intelligent. This general rule, however, does not seem to apply to particular cases, although it would seem to hold true of civilization as a whole.

Among certain men, on the other hand, it is possible to detach, as it were, the reasoning powers and so to devote their energies entirely to a certain objective, while

ignoring them in the things of everyday life. It may be that their use of the reason is so devoted to this one objective that the lower parts, the emotions and the desires, gain control when it is not to the fore, in the same way as tiredness overcomes our muscles when the excitement of some competitive exercise is past and the race has been won or lost, although at the time no pain or fatigue is felt. On the other hand, it may be that the reason has become the slave of the desires and is being used to further their ends in the shape of a lust for power, money or fame.

We must conclude, therefore, that morality and rationality is a matter of a perfectly balanced mind, for all the parts must function so that no one part obliterates the proper use of any other. Above all, the lowest part, the desires, must function according to their level; they are the servants of all even though they may claim recognition above the others in times of emergency. Reasoned intelligence, therefore, is a natural intelligence working in perfect harmony with the other parts of the mind and so far, indeed, is morality proportional to the amount of reasoned intelligence in an individual.

We are now reaching a point in the discussion, already hinted at, which may be called the corner stone of Personality; and it offers perhaps the most difficult problem in the history of speculative thought, for, although it concerns each of us and we can each regard it from the standpoint of our own experience, yet we can never look at it objectively nor dispute about it as we can other problems. "I think," "I remember", "I determine", "I want", "I imagine"—what is this "I" which we cannot deduct from the rest of ourselves in the way we can deduct parts of our bodies and our minds theoretically from the whole?

I can reason and I can consider the nature and validity

of my reasoning, and I can consider myself considering the nature and validity of my reasoning and so on *ad infinitum*; but there is always the baffling "I" which is constantly active as long as the Person exists and which uses all these parts of the mind which we have enumerated as well as the parts of the body; the "I" which must always be active if the mind is active, and which can never be the object of its own thought—the "I" which is the residuum thinker.

There is a modern school of thought—a psychological school which does attempt to study normal thinking—which maintains that the whole is more than the sum of the parts, and it is doubtful whether there is better evidence for the likelihood of this view than that provided by the fact of the residuum thinker. Here, too, lies the locked door to the mystery of Personality, and it is a door that can never in this world be unlocked because any attempt to detach ourselves from ourselves involves the necessity of employing the "I" on such an activity. Nor are we any better off if we try to make the "I" of another person the object of our thought. We can study no more of him than we can of ourselves, indeed, we can study a great deal less. For one thing, we can never, with certainty, determine the motives of other people, which is a thing worth remembering when we so readily judge one another's actions. Behind each motive is the whole Person, what he is determines what he does; and every action is the result of the sum of his past. Secondly, as we have seen before, we cannot enter into his experience except in as far as we ourselves have been in a similar situation.

Every event in the life of a man may be said to be composed of two parts, the subjective and the objective, that is, the point of view of the person and the bare external

circumstances. The result is that every situation, however apparently a repetition of another, can resemble it only in the matter of the bare external circumstances. Half of it is entirely different so that no two persons can ever be said to share an experience except in a limited sense of the word.

Further, we have no means of calculating the intensity of a desire in another, and we cannot really understand the force of the attraction to someone of that which in no way interests ourselves. A good example of this is the two opposing points of view of the man in the street with regard to modern art. The one side enjoys gazing at and possessing pictures of this type, but the other cannot see the value of wasting the materials upon such "rubbish". And to both the other's attitude is inexplicable. Finally, we can have no share in the memories of any outside person except in so far as the memory is recounted; but then a recounted memory is as different from the memory itself as is a feeling recounted from the feeling itself.

Thus it is that we can neither study our own egos nor those of our fellow-men, and so we cannot penetrate the mystery of personality. The whole is more than the sum of its parts, but all that we can contemplate is the parts that make the baffling whole, less that one part which is, itself, the contemplator. As finite persons, therefore, we shall never know our selves fully and still less shall we ever know those about us fully; so that where we now judge we should study, where we now assert we should contemplate, and where we now censure we should try to learn the more of that which we can never properly comprehend. Thus, as Socrates said many centuries ago, by knowing that we do not know we shall be setting our feet upon the path of Wisdom.

## CHAPTER VI

### MIND : MASCULINE AND FEMININE

As we left the situation at the end of the last chapter, it did not look very hopeful for any further attempt to penetrate the mystery of mind. And what we have said concerning it already is little more than anyone could say who had studied his own mental activities and such as are apparent in others. It is possible, however, from ordinary observation to proceed a few steps, for hitherto we have dealt only with an imaginary being who is the universal Man, as philosophers would say, or, as we put it before, the Lowest Common Denominator of all men. Now, therefore, we must try to draw a line between the mind of a man and that of a woman, for that there is scope here for further investigation cannot be denied.

Anatomists tell us that there is no structural difference, whether microscopically or macroscopically between, the brain matter of either sex, and although it is true that the man's brain is sometimes larger, just as in general his whole frame is larger, even this is not a certain distinction in particular cases. We know, too, as we have seen that the endocrine organs are the same in both, save in the one important instance of the cortex of the ovary and the interstitial cells of the testis, and that it is to this difference that we may, with some likelihood, attribute the psychological individuality of the male and the female. We do not, however, know what effect, if any, the endocrines have upon the nerve cells of the brain; it may be that herein lies the difference we have stated; but for the present we must ignore the possibility, for it is a line of research still waiting to be investigated, and as such, it cannot be offered as an explanation even

tentatively. We can do little more than speculate as to how the ovary and testis, pieces of matter, can affect the personality, and therefore we must pass over this problem and proceed to stating of the differences that seem undoubtedly to exist between the sexes.

In the last chapter we mentioned that popular opinion maintained that man was ruled by his head or his rational part and that woman was ruled by her heart or emotional part; and we identified the emotional part with intuition in that instance. That this classification is true as a general rule cannot be denied; it is a point that has been made the central feature of many a successful play, book and film, the situation being one that can be appreciated by all.

Now, the history of the relationship of man to woman throws light upon the psychological distinction between the two; and if this history is studied carefully, it will be seen that the emotional superiority and rational inferiority of the woman to the man, as a general rule, is the result of force of circumstances having their origin in some unknown factor, whatever the factor is that makes the woman the physically weaker of the two. These circumstances are produced by the firm conviction existing in the mind of man that the woman's place is in the home.

Therefore, what may once have been, perhaps, a happy partnership of hunter and cook (or if not happy, at least complementary), deteriorated until the woman became little better than a menial, to love, honour and obey—but not to think.<sup>1</sup> Her rational part might concentrate only upon the smoother running of her household, the welfare of her young and the comfort of her lord and master; in other words she had scope for only two types

<sup>1</sup> Matriarchy has been rare and we speak in general terms.

of reasoning: that concerning objects of sense-perception, the lowest level of thought, and that concerning the elementary form of mathematics which is involved in keeping accounts: the lower grade of the second level.

Moreover, she was encouraged to develop to its fullest extent her emotional part; it was right for her to be anxious if her husband was late, to be sorry if he was in trouble, to grieve at his death, to love him, to sympathize with him, to fear for him, to be in awe of him and to be ashamed of her own deficiencies. Thus were the higher or altruistic emotions brought constantly into play. To fulfil her functions properly it was necessary for her to study him carefully, quietly to learn his likes and his dislikes and how to fall in with his moods; and in this way she learnt the art of putting herself in his place and of knowing beforehand how he would be feeling or as the French say she became *sympathique*, a word that expresses the situation better than does the English "sympathetic".

Man, on the other hand, has been driven, also through force of circumstances, to devote his mind to things abstract, even perhaps to the exclusion of practical matters. In the formation of the society and the State he has had to deal with the problems of moral and political philosophy. Theology he has had thrust upon him by the baffling phenomena of nature. Through desire of immortality he has been compelled to keep records and to write histories; and it has been for him to answer the multitude of whys and wherefores, whats and hows that have come crowding into his mind from the first day he descended from the tree into the cave. He has had to think, and he has had to think about the Abstract.

On the other hand, however, there was no compelling need for him to become emotional beyond a certain

point, for at home he owned no master; and in the State he was wont to live rather by his wits than by his emotions; indeed, he had little to be emotional about. We might, therefore, form the following equation: The man's rational part is to the woman's emotional part as the woman's rational part is to the man's emotional part. In this way it is clear that, given certain circumstances, the minds of man and woman are really complementary to one another, and that if the two minds were merged, as it were, into one the highest in married life could be realized. Such a harmony, however, is, unfortunately, more often the exception than the rule.

Now, if we consider the effect of emancipation upon women to-day, we shall perceive how deep a mark the training of many centuries has left upon them. We know how in our bodies we have remnants of former useful parts, remnants which seem to act as a reminder that what we do not use we shall lose. The prehensile thumb on the foot of the ape is, on man, the big toe, good for balancing but useless for climbing trees; so, just in the same way, though to a considerably lesser degree, the rational part of woman has deteriorated somewhat, or perhaps we should say, has not evolved, so that in matters outside her own home, as in household affairs, she has been so long wont to, she trusts to her "intuition" and ignores cold logic as something quite beside the point with regard to what she knows and what she does not know.

Yet children who go barefoot from their earliest years and who run and jump and climb, come to use their toes, to some extent at any rate, after the manner for which they were originally developed; and so, too, women who have been taught to use their reason in some degree develop it until they are capable of tackling certain of

the problems which had been for male consideration alone before. The result is that there is a percentage of women to-day holding posts of an academic or scientific nature which may lead people to argue that it was only a lack of education that previously made them appear inferior to, or different from, men in intelligence.

This, however, is an illusion. The highest education cannot eradicate—even were it desirable for it to do so—the marked development of the emotional part which is woman's heritage. Since even an academic career involves something more than learning and thinking, this intuition, which may be overcome by the reason when abstract subjects are the objects of thought, rears its head again and again when this object changes to something more concrete, in other words when theory becomes practice. It seems as if there is a departmental method of thinking common to them as the result of which they fail to apply to their behaviour the truths they admit theoretically. Rather, they treat the world as if it were but another glorified household to be dealt with after the manner of housewifery.

This radical difference between men and women is further exemplified in the qualities that can be attributed to each. These qualities bear the same name but the conception behind them differs in as much as the male conceives them in terms of the world, that is, as widely as they will allow, whereas the female considerably narrows their intent.

Perhaps the most striking example that we can take is "a sense of honour" which is inevitably linked with a sense of proportion. Few men think that women possess either, but the real point at issue is in the definition of the term. The man will perceive and apply the principle of the rule to any case, but the woman will regard it

only from the practical and advantageous point of view. She can follow a rule and she can understand a rule, but she fails to see when that rule must give way before a wider and greater rule. Or shall we put it another way. Even if she perceives the principle behind the rule she is unable to weigh one principle against another. (Here it may be as well to reiterate the reminder that we are speaking of women and men in general; and while admitting that there are individuals to whom these remarks do not apply, we do not think that any particular exception invalidates them.) If this is true of women who have had a higher education and so have had their rational part to some extent developed, how much more obvious will it be, in the case of all those who apply to the affairs of the world a type of thinking suitable only to the hearth, that women are essentially intuitional and not rational beings? Indeed, amongst men that cry of Æneas is still echoed to-day: *Varie et mutabile semper femina*, "A woman is ever a fickle and a changing being." That is why she is incalculable for she knows no laws of thinking, and contradictions and inconsistencies perturb her not a whit. And even the highest education seems to alter this factor very little.

To whatever side we turn, then, or whatever activity we may consider, we shall invariably come up against this major distinction between the two sexes. Where nature endowed man with strength and persuasive powers, she endowed woman with charm and guile; but then nature was not to know that in the future woman would attempt to claim equality with man or that she would ever have to undertake man's work. To participate suitably in the affairs of State in whatever capacity, it is necessary to be able to deliberate objectively, to compare, to weigh, to assess, to judge, and finally to act with a

decision that knows no turning back, which means a fully developed rational part that keeps the emotions in their place and which rules the life.

. . . . .

If we now refer back to Chapter III, it may be that some little light can be shed upon a problem we met with there. For we saw that there were some people who were convinced that they really belonged to the sex other than that to which they were assumed by professionals and laymen alike to belong. We said there, that such persons seemed to have the personality of the opposite sex. Now, if this is so, it would follow that a great part of the difficulties of these people would result from the male thinking and behaving like a female, i.e. acting rather upon intuition, and the female thinking and behaving like a male, i.e. acting upon cold reason. If this occurred, the male would be lost in the company of other men, not understanding how their minds worked and so not falling in with their point of view, and the female would similarly be lost in the company of women.

It is true to say that man does not treat a woman as he treats other men, he does not expect the same things of her, nor is he surprised if her actions appear contradictory or inexplicable, instead he makes allowances for her and grants her certain privileges. The same, too, may be said of the feminine attitude towards men. This, then, may be an explanation of the difficult social life of such abnormal persons. But there is a still more important inference which can be drawn from this analysis of the minds of the two sexes.

We have said that apparently training and education will not succeed in eradicating the emotional pre-

dominance in the female. We may, perhaps justifiably, infer too that we cannot eradicate wholly the rational predominance in man, should anyone ever attempt such a task; hence, the personality of the other sex possessed by these people, must inevitably be innate and not acquired as so many psychologists would have us believe. At least, this view must surely follow upon the acceptance of any distinction between the masculine and feminine mind as being essentially different, and seeing that higher education does not seem to make a male personality out of a female, there seems little alternative to accepting it. Moreover, suppose it was an acquisition, as some psychologists say; does any adult, much less child, study mind and matter sufficiently carefully to be able to become a predominately rational being in the case of the female or a predominately emotional being in the case of the male, as so to resemble the opposite sex as nearly as possible?

Within the limits of our present knowledge, therefore, and judging solely upon probability, the balance would seem to tend toward the side of innate disposition and away from that of acquired habits. Adding to this such evidence as we may have adduced in the matter of different types of these persons, the psychologists will have to bring more weight into their scale before we can accept their views.

There is one further point which we must consider before we leave this subject, and that is the question of genius. For if we consider genius as opposed to sheer intellectual capacity, the genius of art, music and poetry, we can see that pure artistry pre-supposes a sensitivity beyond the normal and sensitivity pre-supposes a well-developed emotional part. Moreover, genius of this type is almost entirely confined to men, none of the old

masters have been female, indeed, we might say that Sappho alone keeps company with the great names of cultural civilization—and Sappho was not reputed a normal woman. This observation, therefore, would suggest at first sight that our above analysis was wrong, and that men too were sometimes possessed of a predominant emotional part. Hence we must consider this more carefully.

Now, this sensitivity, in the first place, must be innate, geniuses are born not made, surely no one would deny that? Secondly, with this innate emotional part well-developed, there is no reason to suppose that there is a decrease in the quality of the rational part, for if it were there would be an example again of the feminine man, but this is not born out by the facts. Hence, geniuses are apparently endowed with a double portion and what is especially important, a double portion which is properly balanced and in harmony. Having seen, therefore, that training of the rational part in women does not make it work in harmony with the emotional part, we must conclude again that it is this innateness that is the crux of the matter.

We have postulated a difference between genius and intellectual ability which, however, may not be accepted immediately. A brilliant intellect draws inferences and deduces and relates where the average man sees nothing but data and statistics. But the essence of genius is the feeling of oneness with the subject, and where intellect will consider, genius will feel and, therefore, where both feeling and thinking are present in fullness, there, surely, will be genius. But where the sensitivity or feeling is present without the intellectual ability, there will be an uncertainty in the results in as much as there will be no check upon it and, like all else human, it is liable to error.

Now, many artistic geniuses are notorious for their eccentricities whether in the manner of their dress or of their behaviour. They seem inclined to assume brightly coloured shirts, velvet coats and trousers, flowing bow ties and a carelessness as to the length of their hair. Frequently, too, there is present what has been termed "an artistic temperament". Sometimes, also, homosexuality is coincident, but there is not sufficient evidence of its constant conjunction to draw any definite conclusions from it. Yet there is the suggestion that there is something crying out in the artist for delicacy of line and beauty of colour, protesting against the severity and drabness of ordinary male attire, and this something is apparent as a general rule in the female sex. Hence, may we not conclude that in the genius there is a streak of the feminine above what is normal in the male?

A woman *feels* with regard to herself, her home and her everyday affairs, but the artist *feels* with regard to the objects of his art, the beauty in the world; and according to the nature of his talent he portrays what he receives from nature, whether through the medium of the pen, the paint-brush or the piano. Moreover, those who see or hear his work, are able themselves to know he has reached out to the essence of his subject, and that, now having been shown, they can feel as he felt and enter into a oneness with the subject that was hitherto debarred from them because their own sensitivity was not sufficiently great. It is a test of the highest in art that it is instantly recognized, even by the most ignorant and uneducated, to be portraying Truth, things as they are rather than things as they appear to be to those who cannot see beyond the surface.

All these observations are based upon the hypothesis that there is a radical difference between the mind of a

man and that of a woman. If, however, this hypothesis be disputed, the whole structure admittedly falls to the ground. Yet, as it stands, it does seem to offer not answers to problems, but possible lines of approach, for answers require proof and here we have no proof, merely the criterion of probability and, we hope, no false step in the reasoning process. Let us, however, add one more observation to the edifice.

There are, of course, many women who, having benefited by an education modelled upon male lines, and with a natural capacity, have succeeded in beating men in their own subjects. The results of public examinations show this. Perhaps it may be thought that this invalidates our theory. But it is accepted that many women are more intelligent than many men in just the same way as many women are taller than many men or stronger. What does not appear, however, is that, given a man and woman of equal intellectual capacity, the woman ever predominates. This assertion is made without the possibility of enumerating all the combinations there are, but it is not without some external evidence. Our scientists, our doctors, our theologians, our philosophers, our psychologists, our statesmen, our barristers, our authors—at the top of each and every profession stands one or more men. Perhaps time will change this state of things, perhaps it is only the newness of the emancipation of women that is the cause of this; if so our edifice falls to the ground. But that is the fate of most speculative edifices, for one method of acquiring knowledge is by eliminating errors.

At all events it must be admitted that here is food for much thought and scope for a wider inquiry. First and foremost we have the problem of the human mind and its normal functioning. Then there is the possible difference between the masculine and the feminine mind and

the complementary nature of the two. There is the matter of the psychology of dress which has had far too little attention paid to it by psychologists hitherto. There is the question of the difference between intellectual brilliance and genius. There is the problem of the relationship of the world to the mind in the shape of beauty to the sensitivity of the individual. There is the difficulty—women possessed of an “artistic temperament” find of fitting into the scheme of things. Indeed, problems never ending rise up when once we start to consider Man and his world.

“Know then thyself,” said Pope, “presume not God to scan,  
The proper study of mankind is Man.”

“Know thyself”, certainly; that was the inscription over the porch of the temple of the Oracle at Delphi; it was the inscription upon which Socrates based his teaching; but, surely, in knowing ourselves we cannot but help approach a little more nearly to Mind from which our minds seem to be but offsprings, incarcerated elements of the Infinite, themselves infinite but bound to the finite? It is, of course, a matter of opinion; some like to deny everything but the objects of their senses, others, again, prefer to doubt these, but to some the study of the human mind seems to imply inevitably something greater, wider, more comprehensive, toward which our intellects are ever struggling and to which they appear never able to attain, being dragged back always by those lower parts of us which cannot tolerate pure thought but which must concern themselves with the things of the body, the emotions and the desires. How are we to throw off the shackles of the baser elements? Are we ready to throw

them off? Shall we ever learn to control our minds so that the body may become of secondary instead of primary import?

These are questions which do not, as a rule, touch the man in the street, they are unfortunately confined to the intelligentsia. Children are not taught to use their minds for the most part; their mental exercise is of the barest and most uninteresting nature, so that the search for Truth is hampered by a lack of variety in the searchers as well as a lack of numbers. For with new material would come new thoughts, new points of view and so further progress, but until the defects of education are remedied the standard of intelligence of the adult population will remain static; for the rational part, being innate but untrained, will confine its activities wholly to things that are sense-perceptible, so that only the lowest level of rational thought will ever be attained save in isolated cases as it is to-day.

## CHAPTER VII

### FREE WILL

WE might talk at greater length about the different characteristics which are evident in people, or we might discuss the "weakness of human nature", that delightfully vague phrase which covers a multitude of sins, in fact there is no end to the possible dissection of ourselves as thinking beings. The moral sense which we have touched so lightly on is, itself, a subject that requires a lifetime of study; and, indeed, many a life has already been spent in wrestling with the problems it offers, and the problems are still with us. Admittedly we are here touching the fringe of a wide variety of questions involving both science and philosophy. But this last chapter concerns a matter that may have occurred to the reader during the course of the book and which certainly occurs to most of us at one time or other in our lives. For, having performed some action that has been the result of a prolonged deliberation, are we not apt, on looking back, to ask ourselves: "Could I have done otherwise?"

This is the central problem of Ethics, concerning which moral philosophers write lengthy treatises under the heading of "Free Will". Nor is it absent from our religious circles. Man has, in this as in other cases, used religious views for his own ends, so that, in days gone by, its solution or quasi-solution became important to the ruling classes, although they were in no wise concerned with the truth of that solution. Religion promulgated a suggestion and the State fostered it and spread it abroad:

"The rich man in his castle,  
The poor man at his gate,

God made them high or lowly  
And ordered their estate.”

In other words, man, to suit his own ends, announced that all things were predetermined, that man was not free. Since the Industrial Revolution, however, man has been showing increasingly his resentment at the implications of such a dictum; and, indeed, do we not all like to think that our destiny is to a great extent in our own hands? Our very laws and codes seem to suggest that people are responsible for their actions, for, as we said before, we distinguish the lunatics, the deficient and infants from the rest of the citizens when they are convicted of an offence or a crime. If, therefore, we think some people are responsible for their actions, we imply that they have freedom of choice in the doing of right or wrong. But in view of what has gone before, this opinion may perhaps seem to be a false one, and so it is suitable to go into the matter here.

It has been said that a man's actions are the sum of his past responses. A man *does* because of what he *is*. We have therefore to consider what it is—or better, what are the contributing factors that make a man what he is. Now if we survey what has gone before we shall notice at once that those three factors which seem to affect the Personality will have some bearing on Free Will also. For if we inherit tendencies and are born with a certain kind of endocrine system which we cannot alter and, in our early years have our environment forced upon us may we not ask: Can we help our characters and personalities, and is it our fault if we be bad instead of good? Are we free-willed beings? Let us, therefore, consider these three influences in the order in which we receive them.

In the first place, then, there is heredity. We know, now, how the chromosomes, carrying genes, transmit physical characteristics and psychological tendencies; how the infant acquires a complete set of forty-eight pair of these chromosomes, twenty-four of the mother's and twenty-four of the father's, and that, as each parent, when itself is an infant, inherited the same from its forebears and so on, the baby of to-day has something in it of the whole line of its ancestry on both the paternal and the maternal side. For none of its inherited qualities or characteristics can it be held responsible. Hence, any individual may be born at what appears to be a great disadvantage. He may, for instance, be the weak-willed son of a weak-willed father. Now since it takes a strong-willed man to act contrarily to his disposition, it may be asked how can a weak-willed man ever shoulder his responsibilities and make his own decisions, for to do so he must be strong-willed and thus it is a vicious circle.

From heredity we pass naturally to environment, for we saw before that certain tendencies only become actualized if the necessary attendant circumstances are present to draw them out. Therefore, a great deal of what is potential in us may never appear. Now, if we may digress again for a moment, it would seem that the personality itself is not so much affected by an experience as it is affected indirectly and through this actualizing of a tendency. If this were so it would call for an alteration in the procedure of remedial psychology, for a tendency actualized can surely only be annulled by the actualization of another more powerful tendency of one that is contrary which may eradicate the first. There would then be the need of discovering a tendency that could overcome the harmful one, and this involves not only the certainty of such a tendency being present at all, but also of finding that

experience or set of experiences which will bring it out.

To return to our main theme, however, the child is not responsible for its prenatal environment nor for its early environment and, although the growing person does, to some extent, create its own experiences, this depends a great deal on its disposition, whether it is shy or adventuresome or studious or mischievous, and these dispositions seem to be innate.

If we turn to the third factor, the endocrine organs, we shall, of course, be treading on uncertain ground. Some twelve years ago, when the study of the glands first came to the fore, some of the rashest and most enthusiastic researchers were so carried away by the little evidence they had collected that, with no sufficient grounds for generalization, they were led to assert that different types of persons were influenced by the predominance of one or other ductless gland. Thus they made out a classification of characteristics, and proceeded to talk about the Pituitary type or the Thyroid type or some other endocrine type. We have seen, however, that this is at present impossible owing to the intricate relationship which exists between all the glands, so that, even if one be deficient, it does not follow that the person is directly affected, for the affection may be indirect through lack of stimulation of another gland.

Yet, we have good grounds for believing that in some ways we are controlled mentally by our glands, for we have seen that the extent of our virility and femininity depends upon the balance of our hormone secretion and from that we inferred that our rationality and sensitivity depended also to some extent upon it. And is not this the foundation upon which characters are built?

As against these general factors, however, let us outline the particular problem which, perhaps, brings home more

clearly than any other the conundrum of Free Will. The problem is that of the "degenerate scion of a noble house" and the son of the low-bred criminal or drunkard who makes good. In the first case, the child has all the advantages that can possibly accrue to him: good training, decent surroundings, excellent nutrition, a liberal education and a long line of ancestors reputed in one respect or another. The second child has none of these things: he is brought up in a squalid home among dirty, narrow streets where thefts and brutality are the order of the day, with the scantiest education or else education along the wrong lines. Yet the first may bring shame upon his family name, running a steady downhill course throughout his life and dying in poverty and squalor if not in prison. In contrast, the other may, apparently by his own resources entirely, rise above his surroundings, slowly, step by step, by working at night to educate himself and by working by day to earn his living, by frugality, by denial of necessities much less luxuries, by taking every opportunity, by sheer determination and force of character. *And we praise the one and blame the other.*

Praise and blame, reward and punishment, that is society's way of signifying the existence of possible moral action. Hence, at this point it will be necessary to digress again in order to approach our problem from another angle. For some people believe that morality is nothing more than a state-made affair, a matter of laws made for its own preservation outside of which there is no moral sense; in fact that it is little more than a utility. If this were so there would be no problem of Free Will, only a problem of computation; desire of reward and fear of punishment would be the only factor in the control of our actions. We should always be free to act and the result would depend upon the correctness of our calculations.

In the first place, there would be no absolute values, verdicts as to the rightness and wrongness of an action would be in accordance with its apparent appropriateness, and "rightness" would be a coldly mathematical quality. But such mathematical correctness is not possible in this world because we never have the whole sum before us: we should have to judge by consequences and who is to determine at what point the consequences cease to be important? Is it only the immediate ripples round the stone we throw into the centre of the lake that we count, or do we also include the wider circles that reach its shores? Consequences are as far-reaching as the race of man.

Secondly, we have two words, "good" and "right" which, applied to an action, have not quite the same meaning. The one is subjective and the other objective; in other words, we call an action good regarding it from the standpoint of the agent and right, from the standpoint of the external circumstances alone. Now, those who deny a moral sense also deny any difference in meaning between "right" and "good" and they must also deny, as indeed they do, all altruistic attributes. "A good boy" is to them meaningless unless it be interpreted as "That boy has pleased me". "Noble", "honourable", "unselfish", "loyal" are mere words—or are they? At any rate they are expressions that are understandable by the majority of the community and hence we must admit they represent conceptions and as such they are justifiable attributes. All this, therefore, points to a real distinction between the right and the good.

Moreover, all Utilitarian theories, that is theories which admit only of desire or fear or utility, use the very word, the existence of which they deny. "You ought to think only of the greatest happiness of the greatest number", "You ought only to please yourself", "You ought only

to think of the greatest good of the greatest number". These and many others employ the word "ought", as, indeed, all general rules do, and it is a word that is essentially of a moral intent. Yet those who hold such theories refuse to admit a moral sense and is not "ought" and "ought not" the basis of conscience?

Hence, we have either to involve ourselves in contradictions or to admit the existence of something which is present in the world at any rate as a conception. We know we sometimes follow the dictates of conscience and sometimes act contrary to it whether or not it is supported by reason. And if we agree so far, our problem of Free Will is as much in evidence as ever. Indeed, what man or woman likes to think that, try as he will, he cannot act except as some ironic destiny decides?

No facts which science can bring to light will alter the problem or the attitude we hold towards it. If once we were convinced that, man was the victim of heredity, environment and his physical parts, we should logically have to cease all praise and blame, reward and punishment and refrain from talking in terms of good and evil. Despite the doubters in our midst, however, we have not yet done this, nor does it seem likely that we ever shall. It is far more credible that there is some element beyond these three factors which, despite them, can make a man act "freely". More credible, perhaps, but no more easily proved. Indeed, Free Will cannot be proved to exist, but then neither can you prove that you exist; in both instances reasons for believing, alone, can be offered. And if it be remembered that nothing in the Universe can be proved, nor even the existence of the Universe itself, then it should not perturb us so much that those things which we value the most cannot be proved.

We have so far shown that people do believe that men

are responsible for their actions, but we have not shown why they think this. Is it, possibly, because of what we termed the residuum-thinker—that is, because of the unpredicability of human nature? This, at least, gives us food for thought. The residuum-thinker may, perhaps, be something above and beyond heredity, environment and glands. But the only answer this gives to the question, “Could I have done otherwise?” is “I do not know”, and, as such, it is inadequate.

“Could I have done otherwise?” Does this query not raise another one? “Did I perform that action willingly?” And the word “willingly” must be emphasized. We all know that sometimes we say or do something, all the while thinking to ourselves that we shall regret it afterwards. We are prompted by a momentary desire that is intense—to retail a bit of gossip, to eat something we know will disagree with us, to have a petty revenge on someone who has annoyed us—a hundred instances could be given. Surely, then, we are not acting willingly, we are following, instead, some animal desire, some lower part of ourselves.

Now to refer back to that Greek philosopher upon whom few thinkers have improved: Plato. Dealing with this problem in a tentative way (for he first put it into writing), he maintained that we could be the slave of our own desires. Now it is usually held that anyone who does anything under compulsion is not a free agent, a slave is not thought to be free nor is he held responsible for his actions in as far as they are the results of commands given to him. Yet, surely even a slave, provided he does what he does willingly and gladly, not with the willingness that is produced by fear of punishment, is no slave. In any particular action under these conditions he is a free man in a nominal state of slavery.

If, therefore, we apply these comments, not to physical slavery by some external agent, but to ourselves, we must surely perceive that when we do an action, throwing ourselves heart and soul into it, doing it with our whole being, that is, then we may safely say afterwards, "No I could not have done otherwise, for there was nothing of me left out in the acting. No agent nor any one motive urged me; I was free." On the other hand, if we were moved by one part of us only, whether by a desire or an emotion that was selfish or altruistic or whether by sheer reason or by a sense of duty, then the answer must be: "Yes, I might have done otherwise for, if not, I should have acted with the whole of myself and, as it was, I acted only with part of myself, I was not acting freely."

It is interesting that one would have expected that when the answer to the question "Could I have done otherwise?" was negative, then we should not have had any freedom of choice, and when affirmative, then we should have been free. It does not, of course, follow that because the conclusion is unexpected, therefore it is unacceptable. It must be judged on its own merits entirely, whether there is a false step in the argument or whether there is a mistaken premise, these are the only points at which an assault may be made.

Let us, then, consider this theory in its application to our present difficulties. Despite glands, environment and heredity, surely we must admit that a man can, at any given moment, either throw himself whole-heartedly into an action or do it reluctantly from one motive or another. This is not beyond the bounds of credibility. And regarded from this angle there is really no problem of Free Will at all for, when a man acts with his whole self, the problem does not apply, and when he acts with part of himself there is no freedom in his action. Thus, we

might say that the "degenerate scion of a noble house" who lives in constant slavery to one or other part of himself has no freedom, but, since he is a mass of potentiality, it is only that the greater part of this potentiality is never realized because of the over-development of and yielding to some one part. And his counterpart, the son of a criminal or drunkard, determines to realize himself to the full and so, as we say, makes good. To every man of normal intelligence the choice of acting wholeheartedly or otherwise is presented on all occasions: is not this one of the laws of living or of Nature?

In this last sentence, however, we have made a reservation: "to every man of normal intelligence", we said. In some, if not many, instances of brutal crimes and petty offences, of immorality and of amorality, it has been shown that the offender was just under the borderline of intelligence, that had he been under some special educational scheme or sheltered from the exigencies of social life he might never have lapsed. This, however, is a social problem to be dealt with by those who carry out various intelligence tests, but it was necessary to mention it lest such cases be cited against our argument, for it is generally thought that because a man is a member of society, that is, unrestrained, therefore, unless he is suddenly afflicted with lunacy, he is to be judged by the same standards as the rest of men. The fact that borderline cases are hard to detect does not absolve us from the responsibility of making sure that any particular man is responsible for his actions. Once again, it is our lack of knowledge that is at fault.

The conclusions that we draw, therefore, from the theory is that the problem of Free Will exists only when the subject is regarded from the wrong angle. It is customary to think of it from the point of view of the

stimulus to action and the surrounding circumstances rather than from that of the actor. If this attitude is maintained, there will always be an insoluble problem, for, as we have seen, the individual has much in his composition which he cannot control and cannot alter. As against this there is the conviction we all have that we are free-willed men. It is for the reader now to decide which line of approach he will take and what solution he will offer.

And now we come to the parting of the ways. We have surveyed ourselves as animal beings, seeing, as far as possible, how our endocrines can affect our intelligence, emotions, desires and personalities. We have considered those of our fellow-men who are not quite like ourselves, seeing how "the human function is to understand rather than to judge", how generalization is not only useless but unjust, and how the responsibility for tendencies does not rest with the individual but only the actualization of them. We have seen, too, how a person's life can be blighted, not so much by a freak of nature, as by society's attitude towards it. We have gone a little way into the claims of the psycho-therapists and remedial psychologists and we have put forward the claim of the man of experience who has seen life in the greatest number of its aspects. We have surveyed ourselves as human beings and attempted a glance into our mental processes. We have touched upon the apparent differences between the masculine and the feminine mind, perceiving their complementary nature. Finally, we have raised the ancient problem of Free Will, considering how far we might think we were victims of circumstances and how far we could control our destinies.

What more appropriate topic is there than that of our

fellow-men at a time when there is a current tendency to discuss the brave new world we are to make now the war is over? We talk of a better understanding between the nations. We are beginning to realize that national smugness and self-righteousness is partly to be blamed for the present state of things, that, hitherto, we have shut our eyes to facts, and that now we are paying the just penalty. We are resolved that home conditions must improve, that our social services must become more adequate, that much physical suffering must be eradicated. Is it not, therefore, time to consider how we can know more of ourselves so that we can know more of our fellow-man? We are now turning to God, realizing that He has largely been left out of our national life; and we are hoping that those who pride themselves on their righteousness may now cultivate the gift of charity, not fulfilling the letter of the law but its spirit?

Understanding is the keynote of Christianity, for what does understanding promulgate, save love, and what does love promulgate save understanding? But for understanding we must have knowledge and if we do not know ourselves, how shall we ever know anyone else? So much in ourselves is revealed to ourselves which, in another, is a closed book to us. Hence, what more fitting ending than the inscription over the temple of the Delphic Oracle:

ΓΝΩΘΙ ΣΕΑΥΤΟΝ

KNOW THYSELF

## VOCABULARY

- Acromegaly:** Disease, due to excessive functioning of the pituitary in an adult causing overgrowth of face, feet and hands.
- Alimentary canal:** Mouth, gullet, stomach and intestines.
- Atrophy:** Shrinking in size and limitation of function caused by degenerative changes.
- Castration:** Removal of the testicles in the male and of the ovaries in the female.
- Chromosomes:** Rod-like bodies contained in the sperm and ova; carriers of the genes, and in the cells generally of the body.
- Climacteric:** The age when the male or female pass their prime.
- Clinical observation:** Observation, especially bedside, of changes wrought by disease in the living subject.
- Clitoris:** A rudimentary form of the penis in the female.
- Cortex:** In anatomy the outer coverings of an organ.
- Cretinism:** Arrested development of body and mind accompanied by absence or disease of the thyroid gland.
- Duct:** Tube or other passage for conveyance of matter.
- Effeminate:** Imitating the habits of the female sex.
- Endemic:** Belonging to a nation or locality.
- Endocrinology:** Study of the endocrine organs or ductless glands.
- Eunuchoidism:** Resembling a castrated male through lack of development of the testicles or their secretion.
- Feminine:** Developing along the lines of the female sex.
- Fœtus:** An unborn baby during the later stages of development; usually applied to the last six months.
- Gene:** A vehicle for transmission of tendencies and physical characteristics.
- Geneticist:** One who studies genetics, i.e. heredity.

**Gigantism:** Overgrowth of bony structure caused by oversecretion in early life of growth hormone by the anterior pituitary.

**Gonads:** The sex organs.

**Hermaphrodite:** Individual having both testicular and ovarian tissue in the abdomen.

**Heterosexual:** Normal sexual attraction to the opposite sex.

**Histogenesis:** Tissue development from the original cells of the embryo.

**Homologue:** An organ resembling the form of another.

**Homosexual:** Sexual attraction to members of the same sex.

**Hormones:** Secretions of the ductless glands.

**Hyperactivity:** Excess of activity.

**Hyperplasia:** Over-development.

**Hypospadias:** A mal-development of the penis in which the urethral opening is displaced backwards.

**Hypothesis:** An assumption for the basis of an argument.

**Infantilism:** Lack of sex development in male or female.

**Logically posterior:** Dependent upon.

**Logically prior:** Not dependent upon.

**Mannish:** Imitating the ways of the male sex.

**Masculine:** Developing along the lines of the male sex.

**Menopause:** The female climacteric when menstruation ceases.

**Menorrhagia:** Excessive loss of blood during a menstrual period.

**Metaphysics:** A branch of philosophy which studies Knowing and Being.

**Mutation:** Alteration in a gene by some unknown cause.

**Myxoedema:** Disease due to lack of thyroid secretion in an adult, characterized by mental dullness and swelling, particularly of hands and face.

**Ostracism:** Driven out from the society of one's fellow beings.

- Ovary:** Female sex organ containing the ova.
- Ovulation:** The cycle of ovary development that takes place in the female.
- Penis:** The male organ.
- Phenomenon:** Any unusual occurrence. Literally: an appearance.
- Potentiality:** A possibility: anything that will come into being given certain circumstances.
- Premise:** A statement, true or false, used as the starting point of an argument.
- Prostate:** Gland adjacent to the male urethra secreting seminal fluid.
- Pseudo-:** False: apparent but not real.
- Psychiatrist:** A specialist in mental disease.
- Psycho-analyst:** One who practises psycho-analysis, a probing into the memory of the patient.
- Psycho-therapist:** One who attempts to remedy non-certifiable mental disorders.
- Psychologist:** One who studies the normal mind. A term frequently used loosely to cover the above three specialists.
- Puberty:** The period preceding adolescence.
- Residuum:** That which is left when all else has been taken away.
- Scrotum:** The external sac which holds the testes.
- Sperm:** The seed of the male, sometimes called spermatozoa.
- Stimulus:** That which promotes activity in another object.
- Testes: (Testicles).** Male genital organs containing the sperm.
- Toxic:** Poisonous.
- Tripartite:** Having three parts.
- Uterus:** Womb.
- Vagina:** Passage in the female for reception of the sperm.

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