

REGENERATION

BY
KENNETH SYLVAN GUTHRIE

(Translated from the German)

LONDON
NICHOLS & Co., 34, HART STREET, W.C.
1901

9.339

5
2

NO.	
REV.	

CONTENTS.

CHAPTER I.

REGENERATION IN CONDUCT.

	PAGE.
1. Specialism	I
2. Specialism in Education	2
3. Specialization in Avocation	3
4. Specialism in Culture	4
5. Specialism Demands an Architectonic Art ...	4
6. The Art of Conduct	7
7. Application to Organism	8

CHAPTER II.

REGENERATION IN BIOLOGY.

1. Anabolic and Katabolic Crises	12
2. Theories of Growth and Reproduction	13
3. The Rate of Reproduction	16
4. Sterility	21
5. Relation of the Personality to the Organism ...	22
6. States of Life consistent with Maximum Individua- tion	29

CHAPTER III.

REGENERATION IN PHYSIOLOGY.

1. The Neurology of the Reproductive Function ...	33
2. The Origin of Secretion	36

	PAGE
3. The Process of Maturation	39
4. The Place of Storage... ..	43
5. The Resorption	46
6. Circulation	49
7. The Nervous System	50
8. The Time of Activity	52
9. The Duration of the Periods	53
10. Sidereal Circumstances	57
11. Monism	60
12. Stellar Influences	62
13. Planetary Influences	65
14. Connection of Cosmology with Regeneration	66

CHAPTER IV.

REGENERATION IN PRACTICE.

1. First Proof: Virility	69
2. Second Proof: Old Age	73
3. Third Proof: Vitality	74
4. Fourth Proof: Disease	81
5. First Objection: Nervous Shock	83
6. Second Objection: Spermatozoa	85
7. The Possibility of Regeneration	87
8. The Regeneration with Woman	91
9. Transmutation	92

REGENERATION

CHAPTER 4.

REGENERATION IN CONDUCT.

1. *Specialism.*—It is hard to realize that during the last hundred years more progress has been made in the arts of civilization than during the many thousand years since the first anthropoid appeared on the earth. The marvels of the steam engine, the telegraph, and the printing-machine are so familiar to the rising generation that they seem nothing extraordinary. When the thousands of years of the life of mankind within the light of history, within which so little real advance was made in scientific research, are considered, it seems little short of a miracle that within a century science should have suddenly arisen, that connection should have been established between the most remote corners of the globe, and that race, nation, and class distinctions should suddenly begin to crumble, leaving each man, in the words of Shelley:

“Sceptreless, free, uncircumscribed, but man;
Equal, unclassed, tribeless, and nationless,
Exempt from awe, worship, and degree, the king
Over himself; just, gentle, wise: but man.”

The main characteristic on the new civilization, which has so wonderfully hastened human development, is specialism. Each man becomes an expert in his field of activity. By this division of labour so much of the unnecessary routine of life is saved that the results

amount to an aggregate almost a hundred times as large as would have been possible under the old system of universal genius.

2. *Specialism in Education.*—With the increased sum of knowledge, has come a radical change in education. Whereas it was possible, a hundred years ago, to master all fields of knowledge, in a “classical” education, the field of study has been broken up into so many technical courses, which become day by day more exclusive the one of the other. Colleges have been forced to provide courses in science, as well as in arts. The momentous choice of professions, which came to man after he had finished his college education, in the days when there existed only a single course in arts, now faces the boy before he enters college. He must decide what course he will elect, to fit him for his future career, before he has become a youth, and has begun his higher education. The most wonderful genius can only hope to be great in some one single field, or more often, in some part of it. Medical science has already progressed so far, that no physician can hope to succeed in all branches of his profession. If he is successful at all, he will have chosen some specialty, surgery, general practice, diseases of the ear, eye, throat, or nervous system. Even during his medical course the student must in these latter days devote himself to his specialty.

The result of this marvellous increase of knowledge, and of this specialization of education, is that each man's life tends more than ever to become different from that of his neighbour, the most successful man being he who has carried this specialization so far as to have become almost individual in knowledge and attainment. The social organism is becoming more and more differentiated, and some day it will have attained that perfection of

specialization which is revealed in the structure of the human organism, where each function is part of the whole, but nevertheless so unlike every other as to be unable, to a certain degree, of supplying its place. For example, the undifferentiated protoplasm develops pseudopodia that serve as means both of locomotion and assimilation, and which, if destroyed, can be reproduced immediately. But in the highly differentiated organism of man the legs and the arms are so distinct that if either is destroyed it cannot be replaced. The lives of the locomotive engineer, and of the mill-worker, respectively belonging to the feet and hands of the social organism, are daily becoming more different. New types of life will be evolved in each of them, although the unity of manhood will remain the same in both.

3. *Specialization in Avocation.*—The result of this increase of attainment in every several field of activity will be the distinctive development of every art and technique. From being means of livelihood, every field of activity will become a profession, a calling, demanding the devotion and skill of the whole life. Even to-day the man without a trade or function in the social organism is at any moment liable to starve; much more so will he be in the future, when years of training will be requisite to fit a man for the most humble avocation.

The barber in mediæval times was also the village physician and dentist. To-day, on the contrary, not only are each of these three avocations the objects of different careers, but each of them has become differentiated in several manners, even the barber's avocation. It is no wonder then that even to enumerate the different avocations and professions of the present day is an infinite labour. Photography has become an art. Music was, years ago, a field in which a man might be an universal genius;

now the technique of the piano, the voice, the violin, the violoncello, the wind instruments, has been added to so much that a single one of these departments is as much as a man may hope to master. Painting also has extended its domain. Water colours, oils, pastel, drawing, sketching, china, glass, and sepia paintings are separate departments, offering to the expert an illimitable field of labour.

4. *Specialism in Culture.*—Even external avocations, however, have increased. Whereas, in the middle ages, oratory was an intellectual study, and religion a mere matter of assent to some doctrine, personal culture has, in these latter days, become bewilderingly complicated. Physical culture, once the name of a certain development of muscles and grace of deportment, is the genius of which many well-known and differing systems of personal development are the species. Innumerable are the Christian Science, and other latter-day doctrines and practices of healing, restoring, and altering the conditions of the body. Schools of oratory have as many systems almost as text-books, and independent religious leaders and teachers of the spiritual life abound in every city. Every man is his own prophet and Levite, and each uses a different vocabulary, conceptions and methods. It appears almost as if specialization in all these fields was running fast to its extreme limit, every man for himself, with the exception of those men and women who by nature were designed to be dupes or followers.

5. *Specialism Demands an Architectonic Art.*—At first sight, it would seem almost ridiculous, in view of all this development in knowledge and skill, to ask whether all this increase be a gain on the whole. It appears to have by magical means increased the value of each life to itself and to others, until the value of the whole had

become multiplied almost indefinitely. But careful consideration shows that the gain is not so great as it appeared. The law of Conservation of Energy obtains in such a manner as that even if every part of the life is made more useful and available, yet the sum of the life-force remains the same. There is only a certain amount of life, which cannot increase, even if its functions be changed. The shallow river is wide, and as the river-bed becomes deeper, the banks approach. What is gained in intensity is lost in extension.

The expert becomes more narrow than the universal genius. Concentration of attention on one narrow field loosens the mental grasp of the inter-relation of everything else, even in spite of popular instruction in other departments of knowledge. In the midst of the din of the forge is lost the subtle harmony of the spheres, and in the excitement of the Stock Exchange is forgotten the kingdom within. In the midst of the confusing number of acts and sciences, men lose sight, or rather, are in danger of losing sight, of the art of conducting the whole life harmoniously; in the contemplation of parts of human life men forget and injure their eternal destiny, and sell the lasting inheritance of the kingdom for the temporary satisfaction of the mess of pottage. The things that are, in the long run, least important, take up most of a man's time; and the most vital things, namely, honesty, virtue, and purity, become dim, vague, and hypothetical.

The Art of Life consists in preserving the due proportion between the interest of the present moment, and that of the future destiny, harmonizing the part with the whole. Earthly avocations are after all not ends in themselves; they are but the means by which men become perfected and worthy of their divine inheri-

tance. Things are good or bad only according to their utility, and therefore should be followed as far as useful, and not for themselves. The art of life demands the skill to adjust all functions of the organism and activities of mind and body in order to produce the results most advantageous on the whole. This Art of Life is, as it were, an architectonic art, and may be named the art of conduct.

In the first place, it is conduct. The individual must learn how to guide the stream of his life so as to embrace those opportunities he desires, and to attain whatever skill or knowledge he prefers. External and internal welfare must be carefully weighed, and judiciously adapted. This will be especially difficult in the trying moments of action, when the balance and *morale* of the whole life must restrain and guide the heated emotions and the gusts of passion. Every suitable opportunity must be embraced, and nothing undertaken without sufficient reason. Every man carries his whole life with him in his hand, and he must so guide the interests of the moment, that he mar not the welfare of the future. This careful self-scrutiny and self-direction is conduct, intelligent and planned, not emotional and fortuitous.

But conduct is not an affair of the counting-house wholly, although, as far as the ways of Providence permit it, this should be the case. Conduct is not so much a science as an art. It needs a certain skill to direct the ship safely between rocks, which no scientific knowledge of maps alone will yield. There is much in *savoir faire*, in *tact*, in æsthetics, in wisdom. To those with whom these accomplishments are not natural, they will come only through long experience, which, however, intelligent application can shorten, and render less painful. In short, conduct is an art, which not only study, but a sort of

divine inspiration, a happy genius yields. Therefore conduct of the life on the whole should be studied as unremittingly, as devotedly, and as pleasantly as possible.

6. *The Art of Conduct.*—If conduct be an art, then it can only be acquired as other arts are learnt. Assiduous private study is helpful; but cannot dispense with the personal inspiration of a teacher, even though each teacher differ from the other in opinion and acquirements. The Artist of Conduct, the wise man ideal of the Greeks, is the Teacher of Conduct.

It is the shame of the Christian Church that the Teacher of Conduct exists outside of its pale. Theoretically, the clergyman is the pastor of his congregation. The Bishop is the Shepherd, the episkopos. But congregations call a clergyman because he is a good preacher, a good reader, a good business man, an intellectual leader; not because he lives in constant personal communion with the Unseen. Popular opinion has it that the first requisite of a bishop is business ability and youth; who ever hears of a bishop being chosen on account of his personal sanctity?

In the Middle Ages, the minister of the Church of God was more the Teacher of Conduct to his congregation than he is now; and the confessional has its important influence here, although this advantage is more than counterbalanced by the evil of compulsory confession of the private life to a powerful and secret priesthood and religious order. But in how much is the rector of a fashionable church, with five hundred to a thousand souls under his care, the Teacher of Conduct?

What is the result? The Spirit of God has not left itself without witness in these latter days. Teachers of Conduct have arisen outside the bulwarks of the external visible Church, whose disruption has begun in Sectarianism. The writer of fiction, the poet, the lecturer, the teacher of

physical culture and oratory have superseded the clergy, and even thus the art of Conduct is taught and learnt.

7. *The Art of Conduct applied to the Organism.*—This art of life is not easy, however. The least acquaintance with the world reveals the multiplicity of kinds of lives that may be led, and ideals that may be struggled after. To be wise in making selection of these possibilities, and to have determination to retain hold on them, demands the utmost skill and resource. It would be superfluous to enumerate the various kinds of lives and ideals which the numberless functions of the social organism give rise to. They are, after all, secondary to the conduct of the bodily functions of the acting subject, which ultimately determine success or failure. The guidance of these natural functions, few as they are in number, are perplexing enough to warrant the devotion of a man's whole intelligence in directing them.

The pleasures of the eye, the ear, and of smell are so well-defined by natural functions, that it is only rarely men abandon themselves to a gratification of the senses. As a rule, their excess does not entail harmful consequences, except inasmuch as it awakes or encourages more harmful passions and their appetites. These are the desires of eating, drinking, and the sexual function.

Drinking is a most dangerous habit, and sometimes seems to be beyond cure, when alcoholic liquors have become the objects of a settled habit. Yet the appetite of drinking, when normal, is perfectly healthy and necessary to the welfare of the organism. When, however, alcoholic drinks are indulged in, the cure lies in the hand of the physician, and the subject himself. Except in cases of sickness, the good of alcoholic liquors is more than over-balanced by the danger of acquiring a taste for it. Total abstinence is often cheaper than moderate consumption, followed by a desperate struggle not to become a victim of

spirits. An ounce of prevention is worth a pound of cure, and it is wiser to abstain oneself than by example to lead a weak brother into temptation.

Eating is a necessity for the body. Many eat too much ; but excesses of eating are not as harmful nor as frequent as excesses of drinking. Gluttony is rarer than excessive drinking, and is, on the whole, confined to the wealthy. Gout is the avenger of rich food. The regulation of the diet should lie in the hands of the physician, and the utmost a layman can do is to follow the rules of hygiene. Being as much a necessity as drinking, eating can only be regulated or modified, and does not allow that latitude of self-control which it would admit of if the life of the body could be sustained without it.

Last, but most important, is the sexual function. In one respect, it is different from all other physical functions, in that it is more than any other within the control of consciousness. To live, it is necessary to eat and drink regularly. But men may at will urge or restrain the former desires. Of all the vital functions, it is the one most easily guided and controlled ; consequently, the conscious subject is much more responsible for its exercise than for the function of other organic processes, such as breathing, the circulation of the blood, and the secretion of the digestive tract. Among animals, it is voluntary only during certain periods of the year ; with children, not at all voluntary until the age of puberty. But with the adult human being it is wholly within the direction of the will, or can become so, by taking the proper means. In the last resort, therefore, the human subject is wholly responsible for the exercise of this function.

The art of life embraces the proper guidance of all the functions of the organism. Yet, since the sexual function is the only one which is wholly, actually or potentially, under

the control of the will, it is the most important problem of the art of life. To the elucidation of the difficulties and solutions of this problem the following pages are devoted. It is the one function of the human body which is least known or discussed, although it is the most hateful of the vital processes.

In treating of it, false modesty should be avoided. When God created the world, he saw that all things were good ; and the generative function was one of the things he referred to. Its misuse only is evil. Only after the fall were Adam and Eve aware of their nakedness ; and if any man or woman is ashamed, it is proof positive that he or she also has fallen. Of course, there are evil minds to whom all things are evil ; but to the pure all things are pure. Especially is this so when consideration of these subjects is dictated by a desire to enlighten men and women as to their responsibilities, and to enable them to direct themselves more and more in accordance with all natural law and the Divine Will. The desire to enlighten and guide sanctifies the efforts of all teachers and students. Disagreeable as it may be, it is always wisest to look truth in the face, and to make the best of whatever opportunities are still open to us. False modesty, on the contrary, is the mother of neglect, bitter sorrow, and misfortune.

The art of life is the scientific formulation of earnest desire to know the truth, and to do the best possible with it. The beginning of acquaintance with it may mean a determination to make a new start in life, to turn over a new leaf. This implies that the subject has already come to the age of discretion, abandons his old life, and begins anew. As the first beginning of life was the first birth, so is the second beginning of life the second birth. The Latin name for this second birth has been conveniently transliterated into the English word *regeneration*. The Art

of Life may therefore be fitly called the Science of Regeneration.

The word *regeneration* bears interesting connotations. Among the Jews, and later among the Christians, it designated that ceremony of lustration called baptism. This ecclesiastical function was, indeed, in certain senses just what is described above, a second birth, a new start in life. It symbolized the washing away of sins, and the return to a state of pristine purity. As the first natural generation ushered man into the physical world, so the second spiritual birth, or regeneration, ushered him, by a purer life, into the higher realm of heaven, the presence of the Divine Father. This is, however, only the expression, in religious dialect, so to speak, of the scientific formula of perfect adaptation, by the organism, to all laws of its environment, physical, psychical, and spiritual. In either of these phraseologies, however, the term *re-generation* has a marvellous fitness. Consequently, the term Science of Regeneration may be substituted for the more indefinite Art of Life. Taken strictly, this new term includes the intelligent guidance of all natural functions of the organism. But it will be restricted here to the guidance of the generative function, inasmuch as the latter forms perhaps the most important part of it, and is to be the subject of the following considerations. Here, then, is the higher self controlling the lower self, the spiritual man ruling the natural man.

CHAPTER II.

REGENERATION IN BIOLOGY.

1. *Anabolic and Katabolic Crises.*—Living matter is never at a standstill, until the moment of death. Life is a state of flux, an equilibration of metabolism, consisting of anabolic and katabolic changes, slow or rapid. The anabolic changes are those of growth, of construction, and of self-preservation, by which the life-long hunger of protoplasm is stilled in continual assimilation of food-stuffs. The katabolic changes, on the contrary, are those of oxidation of the tissues, of elimination of effete matter, and the sacrifice of individual existence, more or less complete, for the reproduction of offspring. Growth and reproduction thus ever vary in inverse ratio, the height of the life-tides consisting ever of the resultant of these opposing forces. Nevertheless, knowing this fact, it is possible to guide the height of the life-tides at will, by judiciously increasing the forces of growth, or checking the processes of decay, or following both courses at once, if the purpose be to increase life; and if the opposite be the end in view, nothing is easier than to check growth, or increase reproduction, or once more follow both courses.

The usual end to be attained is, however, to increase life. Therefore the usual method is to increase growth and check reproduction judiciously to the point short of destroying the equilibrium of life, which at its very best still is a resultant of the two opposing tendencies, albeit the one of decay or reproduction, that is, of katabolism, is reduced to

the point in which it is so insignificant as to be inappreciable.

The greatest possible growth is therefore entirely sterile ; the greatest possible reproduction is the minimum of the life-forces. Between these two extremes, life is continually fluctuating ; and since the general direction of the forces of life is, except in the case of virulent disease, under the control of conscious intelligence, within certain limits, it is possible to guide one's life intelligently to the maximum of health attainable, or to the maximum of reproduction possible. The wisest choice will include a little of each element ; but it would be possible to choose the fullest possible health on the one hand, or the pleasure of reproduction on the other, with its natural consequence of lowered vitality.

These changes, however, take place only within certain limits, well defined for each species and genus of animals, who cannot recognize and direct the constructive and destructive tendencies with as much intelligence as man. For man himself there are impassable limits, such as stature, weight of skeleton, and general habit. Within these limits, intelligent self-direction can accomplish much more than is usually supposed. The great majority of human beings permit nature to decide which shall be the controlling force, anabolic or katabolic ; it is only the small minority who intelligently know their resources and apply them consciously to produce results desired beforehand.

It will be advisable to consider more minutely the generally accepted theories of growth and reproduction in lower animal life and in the human race. These problems have been so well and luminously stated by Geddes and Thomson, in their *Evolution of Sex*, that it is impossible to present the topic better than in their words, which follow :

2. *Theories of Growth and Reproduction.*—"The first

adequate discussion of growth is due to Spencer. He pointed out that in the growth of similarly-shaped bodies the increase of volume continually tends to outrun that of the surface. The mass of living matter must grow more rapidly than the surface, through which it is kept alive. In spherical and all other regular units the mass increases as the cube of the diameter, the surface only as the square. Thus the cell as it grows must get into physiological difficulties, for the nutritive necessities of the living mass are even less adequately supplied by the less rapidly-increasing absorbent surface. The early excess of repair over waste secures the growth of the cell. Then a nemesis of growing wealth begins. The increase of surface is necessarily disproportionate to that of contents, and so there is less opportunity for nutrition, respiration, and excretion. Waste thus gains upon, balances, threatens to overtake repair. Suppose a cell to have become as big as it can well be, a number of alternatives are possible. Growth may cease and a balance be struck; or the form of the unit may be altered, and surface gained by flattening out, or very frequently by outflowing processes. On the other hand, waste may continue on the increase, and bring about dissolution and death; while, closely akin to this, there is the most frequent alternative, that the cell divide, halve its mass, gain new surface, and restore the balance. Here in fact the famous law of Malthus holds good. . . .

“The early growth of the cell, the increasing bulk of contained protoplasm, the accumulation of nutritive material, correspond to a predominance of protoplasmic processes, which are constructive or anabolic. The growing disproportion between mass and surface must, however, imply a relative decrease of anabolism. Yet the life, or general metabolism, continues, and this entails a gradually-increasing preponderance of destructive processes’

of katabolism. . . . The limit of growth, when waste has overtaken and is beginning to exceed the income or repair, corresponds in the same way to the maximum of katabolic preponderance consistent with life. The limit of growth is the end of the race between anabolism and katabolism, the latter being the winner. . . . What is true for the cell is true for cell-aggregates. Organisms in their entirety have very definite limits of growth. Increase beyond that takes place at a risk, hence giant variations are peculiarly unstable and short-lived. . . .

“Growth during youth, sexual maturity at the limit of growth, the continued alternation of vegetative and reproductive periods, are commonplaces of observation which require no emphasis. If growth and vegetative increase are the outcome of preponderant anabolism, reproduction and sexuality as their antitheses must represent the katabolic reaction from these. But anabolism and katabolism are the two sides of protoplasmic life; and the major rhythms of their respective preponderance of these give the familiar antitheses we have been noting. These contrasts of metabolism represent the swings of the organic seesaw; the periodic contrasts correspond to alternate weightings or lightenings of the two sides. . . .

“Without going back to primitive disintegrations, or the sexual severance of more or less large proportions, we may point further to the close connection between reproduction and death, even when the former is accomplished by specialized sex-cells. We shall presently discuss at greater length this nemesis of reproduction, but it is important here to emphasize that the organism not unfrequently dies in continuing the life of the species. In some species of the primitive anelid *Polygordius*, the mature females die in liberating the ova. At a very different level, the gemmules of the common fresh-water

sponge are formed in the decay of the asexual adult, while even the sexual summer forms, especially the males, are peculiarly unstable and mortal. The whole history of this form seems a continuous rhythm between life and growth on the one hand, and death and reproduction on the other. Or again, the flowering of phanerogams is often at once the climax of the life and the glory of death. In his ingenious essay on the origin of death, Goette has well shown how closely and necessarily bound together, are the two facts of reproduction and death, which may be both described as katabolic crises."

3. *The Rate of Reproduction.*—So far only the general laws of growth as applicable to protoplasm have been noticed. They are, however, not only applicable to cells, but also to cell-aggregates, or organisms. Here the question appears as that of the rate of reproduction. Spencer has analysed this problem very carefully, and Geddes and Thomson summarize his conclusions.

"Leaving aside cases in which permanent predominance of destructive forces causes extinction, and also, as infinitely improbable, cases of perfectly stationary numbers, the inquiry is: In races that continue to exist, what laws of numerical variations result from these variable conflicting forces that are respectively destructive or preservative of race? How is the alternate excess of the one or other rectified? A self-sustaining balance must exist; the alternate predominance of each force must initiate a compensatory excess of the other; how is this to be explained?"

"The forces preservative of race were seen above to be two, power to maintain individual life, and power to generate the species. Now, in a species which survives, given the forces destructive of race as a constant quantity, those preservative of race must be a constant quantity, too ;

and since the latter are two, the individual plus the reproductive, these must vary inversely, one must decrease as the other increases. To this law every species must conform, or cease to exist. Let us restate this at greater length. A species in which self-preserved life is low, and in which the individuals are accordingly rapidly overthrown in the struggle with the destructive forces, must become extinct, unless the other race-preservative factor be proportionally great. On the other hand, if both preservative factors be increased, if a species of high self-preservative power were also endowed with powers of multiplication beyond what is needful, such success of fertility, if extreme, would cause sudden extinction of the species, by starvation; and if less extreme, and so effecting a permanent increase of the number of the species, would next bring about such intense *individuation*, all those race-preservative processes by which individual life is completed and maintained, and extend the term *genesis* to include all those processes aiding the formation and perfecting of new individuals, the result of the whole argument may be tersely expressed in the formula, *Individuation and Genesis vary inversely*. And from this conception, important corollaries open; thus, other things equal, advancing evolution must be accompanied by decreasing fertility; again, if the difficulties of self-preservation permanently diminish, there will be a permanent increase in the rate of multiplication, and conversely. . . .

“The needed qualification arises on introducing the conception of evolutionary change. If time be left out of account as hitherto,—or, what is the same thing, if all the species be viewed as permanent, the inverse ratio between individuation and genesis holds absolutely. But each advance in individual evolution (it matters not whether in bulk, in structure, or in activities) implies an

economy; the advantage must exceed the cost, else it would not be perpetuated. The animal thus becomes physiologically richer; it has an augmentation of total wealth to share between its individuation and genesis. And thus, though the increment of individuation tends to produce a corresponding decrement of genesis, this latter will be somewhat less than accurately proportionate. The product of the two factors is greater than before; the forces preservative of race become greater than the forces destructive of race, and the species spreads. In short, genesis decreases as individuation increases, yet not quite so fast. . . .

“In extending this hard-won generalization to the case of man, the concomitance of all but the highest total individuation with all but the lowest rate of multiplication (the enormous bulk of the elephant involving a yet greater deduction from genesis) is at once apparent. Comparing different races of nations, or even different social castes of occupations, the same holds good; while the prevalence of high multiplication in races of which the nutrition is in obvious excess over the expenditure is also evident, witness the Boers or French Canadians.”

These considerations led Spencer to consider the problem of over-population. The doctrines of Malthus are well known, and are partly accounted for by this generalization of Spencer's. Yet the methods which Malthus proposed to employ are out of the question, being wholly incongruous with the higher evolution of morality. The Neo-Malthusians propose to reach the same result by a mechanical prudence after marriage, which means that precautions shall be taken that on the part of male and female the seminal fluid should not fertilize the ova. These methods would to a certain extent reduce population, and permit those who survive

to enjoy life more fully. But there are grave medical objections to such practices. There are also other difficulties.

“It is time to point out the chief weakness in Neo-Malthusian proposals, which are at one in allowing the gratification of sexual appetites to continue, aiming only at the prevention of the natural ensuing parentage. To many, doubtless, the adoption of a method which admits of the egoistic sexual pleasures without the responsibilities of child-birth would multiply temptations. Sexuality would tend to increase if its responsibilities were annulled; the proportion of unchastity before marriage, in both sexes, could hardly but be augmented; while married life would be in exaggerated danger of sinking into monogamic prostitution. On the other hand, it seems probable that the very transition from unconscious animalism to deliberate prevention of fertilization would tend in some to decrease rather than increase sexual appetite.

“It seems to us, however, essential to recognize that the ideal to be sought after is not merely a controlled rate of increase, but regulated married lives. Neo-Malthusianism might secure the former by its more or less mechanical methods, and there is no doubt that a limitation of the family would often increase the happiness of the home; but there is danger lest, in removing its result, sexual intemperance become increasingly organic. We would urge, in fact, the necessity of an ethical rather than of a mechanical prudence after marriage, of a temperance recognized to be as binding on husband and wife as chastity on the unmarried. When we consider the inevitable consequences of intemperance, even if the dangers of too large families be avoided, and the possibility of exaggerated sexuality

becoming cumulative by inheritance, we cannot help recognizing that the intemperate pair are falling toward the ethical level of the harlots and profligates of our streets.

“Just as we would protest against the *dictum* of false physicians who preach indulgence rather than restraint, so we must protest against regarding artificial means of preventing fertilization as adequate solutions of sexual responsibility. After all, the solution is primarily one of temperance. It is no new or unattainable ideal to retain, throughout married life, a large measure of that self-control which must always form the organic basis of the enthusiasm and idealism of lovers. But as old attempts at the regulation of sexual life have constantly falling from a glowing idealism into pallor or morbidness, it need hardly be said that the same fate will ever more or less befall the endeavour after temperance, so long as that lacks the collaboration of other necessary reforms. We need a new ethic of the sexes; and this not merely, or even mainly, as an intellectual construction, but as a discipline of life; and we need more. We need an increasing education and civism of women,—in fact, an economic of the sexes very different from that now-a-days so common, which, while attacking the old co-operation of men and women because of its manifest imperfections, only offers us an unlimited and far more mutually destructive industrial competition between them instead. The practical problems of reproduction become, in fact, to a large extent, those of improved function and evolved environment; and limitation of population, just as we are beginning to see the cure of the more individual forms of intemperance, is primarily to be reached, not solely by individual restraint, but by a not merely isolated and individual but aggregate and social—

re-organization of life, work and surroundings. And while our biological studies, of course, for the most part only point the way towards deeper social ones, they afford also one luminous principle toward their prosecution,—that thorough parallelism and coincidence of psychical and material consideration, upon which moralist and economist have been too much wont to specialize.

“When we view reproduction in terms of discontinuous growth,—that is, as a phenomenon of disintegration,—it is obvious that complete integration of the matter acquired by the organism into its bulk, and for its own development, precludes reproduction,—that is, involves sterility,—and similarly as regards the energies of the organism. This is only a restatement of Spencer’s generalization above discussed; for it is evident that, if genesis vary inversely as individuation, it must be suppressed altogether if individuation become complete.”

4. *Sterility*.—From a consideration of the above passages it is evident that the highest individuation is compatible only with absolute sterility, that is, repression of the act of reproduction. This would imply celibacy, or marriage for the sake of companionship alone. It would demand a repression of all the pleasures consequent on the gratification of the sexual function, and even of those thoughts which tend towards awakening its desires. This is the price for which may be acquired the highest individuation possible to the human being under the circumstances that surround him, and which are to him his possibilities.

In this connection it is very important to point out two meanings of the word “sterility.” In one sense, both the castrate and the normal self-controlled man are sterile; also he who is impotent from any natural physical defect. The latter does not suffer from the katabolism of reproduc-

tion, but, on the contrary, does not enjoy the normal strength of the anabolism of growth. Consequently, his normal resultant metabolism need not be higher than the vitality of the normal man who indulges in reproduction. The castrate will likewise be free from the opportunities of katabolic indulgence, but his anabolic metabolism will be confined to the physical anabolism of the growth of his tissues by absorption of suitable food-stuffs. On the contrary, the normal man who is sterile because self-controlled will increase in vitality both because free from opportunities of dangerous katabolism, and because of enjoying to the fullest measure all possible anabolism, not only of the physical body, but indirectly through the resorption of the seminal fluid, of the increase of all vital powers.

To many persons, the absolutely self-controlled man is only an ideal, like the *wise man* of the Greek philosophers. They will not, however, deny that some men have katabolic seminal crises, voluntary or involuntary, oftener than others, and that one and the same man, at different ages, and at will, in a certain measure, can increase or decrease their frequency. This process being an admitted fact, it is only necessary to imagine it carried on to a point in which, as is the case with many men in excellent health, these katabolic crises are an inappreciable quantity that can be ignored. This ideal, to some an actuality, will be sufficient to answer as ground-work for the above arguments.

5. *Relation of the Personality to the Organism.*—In former sections the relation of the condition of the body and that of the mind has been dealt with without defining their exact relation. It has been assumed, at times, that they were identical; and again they have been spoken of as if the welfare of the physical organism was all, without

noticing at all the psychological factor of life. The results of that investigation cannot be definite until their application to physical and psychological realms is made evident, and the influence of the one over the other is demonstrated. It will therefore be wise to devote a little space to Ribot's views concerning this most vital and interesting subject.

"It follows necessarily from the doctrine of evolution that the higher forms of individuality must have arisen out of the lower by aggregation and coalescence. It follows, also, that individuality in its highest degree, in man, must be the accumulation and condensation in the cortical layer of the brain of elemental consciousness that originally were autonomous, and dispersed through the organism. . . . The rise of the colony individuality and of the colony consciousness marks a great step towards co-ordination. The colony, made up of elemental individuals, has a tendency towards transformation into an individuality of a higher order, in which there shall be a division of labour. . . . The development of the nervous system, which is the co-ordinating agency *par excellence*, is the visible sign of an advance toward a more complex and a more harmonious individuality. But this centralization is not brought about in a moment. . . . The physical personality, or in more precise language, its ultimate representation, thus appears to us not as a central point whence all radiates and where all converges—Descartes's pineal gland—but as a wonderful complex network where histology, anatomy, and physiology are baffled every moment. . . .

"Let us reinstate now the psychic element hitherto eliminated, and note the result. It must be remembered that according to our view consciousness is not an entity, but a sum of states each of which is a specific phenomenon dependent on certain conditions of the brain's activity; that it is present when these are, is lacking when they are

absent, disappears when they disappear. Hence the conscious personality cannot represent all that is going on in the nerve centres: it is only an abstract, an epitome of them. . . . These several expressions of the individuality attach to every perception, emotion, idea, and become one with them, like the harmonics with the fundamental tone in music. The personal and possessive character of our states of consciousness therefore is not, as some authors have held, the result of a more or less explicit judgment affirming them to be mine at the instant they arise. The personal character is not superadded, but inherent: it is an integral part of the fact, and results from its physiological conditions. . . .

“Hence the unity of the *Me* is not, as taught by the spiritualists, the unity of one entity manifested in multiple phenomena, but the co-ordination of a number of states that are continually arising, and its one basis is the vague sense of our own bodies, *cœnesthesis*. This unity does not proceed from above downward, but from beneath upward: it is not an initial, but a terminal point.”

This is Ribot's theory of the relation of consciousness to the physical organism. In order to prove this theory of his, he notices the mental effects of sexual disorders.

“Nutrition being less a function than the fundamental property of whatever has life, the tendencies and the feelings connected with it possess a very general character. The same cannot be said of what concerns the conservation of the species. That function, attached as it is to a definite part of the organism, finds expression in very definite feelings. Hence this is well fitted to verify our thesis; for if personality is a composite varying according to its constituent elements, a change in the sex instincts will change the personality, a perversion will pervert it, an interversion will invert it: and this is just what happens.

“First let us recall some known facts, though commonly the conclusions they enforce are not drawn. At puberty a new group of sensations, and consequently of feelings, sentiments, and ideas, come into existence. This influx of unwonted psychic states, stable because their cause is stable, co-ordinated to one another because their cause is one, tends profoundly to modify the constitution of the *Me*. It feels undecided, troubled with a vague and latent unrest whose cause is hid. Little by little these new elements of the moral life are assimilated by the existing *Me*, enter into it, are converted into it, withal making it other than it was. It is changed, a partial alteration of the personality has taken place, the result of which has been to produce a new type of character—the sexual character. This development of an organ and of its functions with their trains of instincts, imaginations, feelings, sentiments, and ideas, has produced in the neuter personality of the child a differentiation—has made of it a *Me* male or female, in the complete sense of the term. Till now there existed only a certain rough draft of the complete personality, but that has served to obviate all sudden shock in the change, to prevent a rupture between the past and the present, to make the personality continuous.

“If we now pass from the normal development to exceptional and pathological cases, we shall find variations or transformations of personality dependent on the state of the genital organs.

“The effect of castration upon animals is well known. Not less known is its effect on man. A few exceptions apart (and such are found even in history) eunuchs present a deviation from the psychic type. ‘Whatever we know about them,’ says Maudsley, ‘confirms the belief that they are for the most part false, lying, cowardly, envious,

revengeful, void of social and moral feeling, mutilated in soul as well as in body.' Whether this moral degradation be the direct result of castration, as some authors assert, or whether it result from an equivocal social situation, is a question that does not affect our thesis: whether the result comes directly or indirectly from the mutilation, the cause remains the same."

Ribot proceeds to adduce cases of abnormal sexual conditions which result in psychic aberrations. These facts that he adduces, however, point to some conclusions which Ribot does not draw, as being in reality beyond his subject. They are, however, directly in our way. If the state of the physical sexual organs have so great an effect on the mental conditions, that pathological conditions of the former end in degradations of the latter, we must conclude that the better condition in which the sexual organs are, the better also will be the mental states. Here also we find well-known facts that corroborate this theory.

As a rule unmarried men who preserve themselves pure possess a keenness or edge of perception which they lose after marriage. The chaste man possesses a brightness of the eyes, a smoothness of the skin, a firmness of muscle, a magnetism of personality, a clearness of thought that is in exact opposition to the phenomena attending onanism and in a less degree of normal exercise of the sexual function. Therefore it may be expected that the man who controls all loss of the goné, or seminal fluid, will heighten the tides of his vitality to the very maximum of which his organism is capable, up to the very limit of his possibilities. He attains this height not necessarily by increasing the quality and quantity of his food, since his organism is not able to assimilate more than a certain amount of it in normal conditions; but by preventing all katabolic crises,

of which the most common and the most serious are the emission of the goné.

A slight digression may perhaps illustrate the subject under discussion. It is an unaccountable fact for physiologists, such as Foster, who are strict uniformitarianists, that if an organism be fed with exactly the amount of food sufficient to balance the excrements, and the increased weight of the body, the organism starves. In other words, the organism needs, in order to remain at the same weight, more incoming energy than appears to leave the body. Now if Foster were a strict and logical thinker, it would be perfectly patent to him that a leak must exist somewhere. If the body remains the same, and more energy enters the body than leaves it, and the law of Conservation of Energy be believed, there can be only one conclusion, that somewhere there is an escape of energy, at any rate in a form which can be analyzed in the test-tube, or weighed in the balances.

This leak of energy is the sexual function. Either the food-particles are condensed in the goné, or, if none escapes, it is then transmuted into psycho-physical form. This is a new form of energy, to be added to heat, electricity, light, and other known forms of it

To return to the subject under discussion, it is in this matter that the human being is at a great advantage over all animals. These only breed during certain seasons, and during the rest of the year are enforced virgins. Man, on the contrary, can use his sexual function all the year round, with greater fertility, however, at the lunar periods. Yet at no time is his self-control involuntary. What he attains is therefore wholly due to his own power, and he can control himself all the year round if he please, while the animals at the breeding season do not have sufficient intelligent self-control to prevent them from seeking sexual intercourse.

Yet on the most liberal allowance the welfare of the physical body cannot account for the powers of intuition which come to all who lead a completely self-controlled life. The body which is at its fullest height cannot do more than raise the mind, or soul, if we please to call it so, to anything above its normal condition; to the fullest possible individuation. Ribot mentions indeed the remarkable feats of memory of those who are drowning, without being able to account satisfactorily for the physical cause of this. He does not hold a "storing" in a separate "function" of memory, but believes that there exists only an individual "Memory" repeated every time a man remembers anything. How then would it be possible for a drowning man to remember suddenly a thousand incidents that he had forgotten wholly for years? Ribot does not endeavour to explain this, relying on unknown causes.

His mistake lies in supposing that because the soul is a product of organic evolution, and in every motion subject to or identical with physical states of brain-matter, therefore there is nothing beyond this. He forgets du Prel's decisive proof of the duality of the conscious life of man, repeated by Hudson, in his *Law of Psychic Phenomena*, and in every book on hypnotism. Because many effects can be shown to depend wholly on physical causes, is that a valid reason why all should be? Is it not possible that there are some causes of a different nature, especially when many effects cannot satisfactorily be explained on physical grounds? There is a sub-consciousness in every man, revealed in the deeper states of trance by hypnotism, which is far-sighted, clairaudient, and which possesses a complete record of the past life. Is it not possible that during waking life man is unconscious of this higher consciousness, which we may call spirit, which reveals itself only under the mental scalpel of the

hypnotist, or in visions of the night, or in great crises, as those of drowning, or other great danger of life?

If this be the case, then the powers which come naturally to the wholly self-controlled, and which are abnormal, such as intuition, and the like, do not depend on the absolute health of the body for existence, but only for occasions of being manifested to the soul. Only when the soul has its full normal powers, which appear when the physical organism is in perfect condition by reason of absolute self-control, as shown by men who are in training for physical contests, and who during that period control their sexual function completely, can it become conscious of the spirit, and use its higher powers for a more intelligent guidance and control of the life.

This would naturally be the maximum of individuation, which can only occur when the katabolic crises of all kinds, and especially those of reproduction, are at their minimum of frequency and intensity. *

6. *States of life consistent with maximum individuation.*— In another place it has been seen that in the life of animals and men the two factors of individuation and reproduction varied in inverse ratio; that the height of the tides of vitality was always the resultant of these two processes. In seeking the highest and fullest life possible, the best manner of life, it is evident that individuation must be accepted as the most desirable characteristic. Reproduction is important only to the race, and does not add to the welfare of the individual; on the contrary, it detracts from it. Were it not for the pleasure which accompanies sexual intercourse, no man could be deceived into assisting the race, being fully conscious that he was injuring himself to that extent. Yet, in a certain sense, when man grows old, it is of advantage to him to have one or two children who will take care of

him. Therefore, the act of reproduction limited to the procreation of offspring is on the whole a good investment, if a man is selfish enough to seek care in old age, and is not willing to trust Providence for it. Besides, when a man ceases to look at the problem from his individual point of view, he sees that it is advantageous that the race should subsist. There need, however, be no fear that the race will cease, if a few enlightened individuals restrain their reproduction. There will always be enough men who care for the pleasures of sexual gratification, or who are ignorant enough to bring forth large families, to keep the race as numerous as it is to-day. Yet, there is no doubt that, considering the dependence of individual life on the co-operation of other lives, each man owes it to the body politic to perpetuate the race. 9339.

In view of all these facts it is necessary to consider what states of life are most consistent with the maximum of individuation, and the consequent maximum of welfare, physical, psychical, and spiritual.

In the first place is the state of marriage entered into, not for the sake of the gratification of self, but for the sake of paying to humanity the debt of continuing the race owed by every individual to it. This need not demand more than one or two exceptions to the rule of self-control, and may in every other respect lead to perfect health, and, in addition to this, to the great joy of sacrificing one's own interest and welfare to that of his children. Such married continence may increase the health and welfare of both husband and wife, increase their mutual love, purifying and chastening it, and finally, when the sexual intercourse takes place, enhancing its delight, since the pleasure consequent on the exercise of such a function varies inversely as the frequency of its occurrence. Yet, beautiful and noble as this state is, it is exceedingly dangerous; for the

boundaries of the highest ideal are but vague when a man is close to them in practice; the descent to Avernus is smooth and rapid. The most innocent caresses may become the greatest sources of danger, he indeed is a hero who can withstand all temptations unharmed.

In the second place, is the state of marriage for the sake of companionship alone. The necessity of marriage is only a tribute to the existing customs of society. These are laudable inasmuch as they keep the body politic together, although to men and women determined to attain this highest degree of individuation it is useless. Yet, under existing circumstances, it permits them to live together.

In the third place is the less dangerous but equally helpful state of celibacy. Here the dangers are few, and if there be no intention of procreating children, here the individuality can attain its maximum development.

Although these states appear to depend entirely on the attitude of the individual, it is plain how deeply they are rooted in the existing state of social custom. The individual can do much; but all he cannot accomplish alone. Were the social state altered, much would be possible which now is difficult or impossible. Healthier views of life, more careful study of nature, and more adequate fulfilment of responsibility on the part of the body politic, with less subservience to old traditions now out-worn, would alter the relations of the sexes sufficiently to enforce morality on men as well as on women, and to enable those who desire to do so to live purely with less notice on the part of the world about them.

A scientific view of life, carried into practice with minute carefulness, will permit each man to attain the maximum of individuation and to dispense with reproduction as fast as he is able. Thus he will attain perfect

health, which is full salvation, the fullest salvation man is capable of receiving.

Mrs. Margaret B. Peeke, in the *Arena* of April, 1895, says well: "If the fact were known that a life of purity in thought, word and deed would bring to a man a supremacy of which he now has but the faintest dream, that by it his life would not only be increased in length, but that all sickness and poverty would be unknown, and even death lose its terrors and cease to exist, mere selfishness would drive men from their present life of animality to the new life of regenerate sons of God. All who live have been children of generation; all who would be immortal, and have powers belonging to immortals, must be children of regeneration. 'Ye must be born again' was not a vain utterance."

CHAPTER III.

REGENERATION IN PHYSIOLOGY.

1. *The Neurology of the Reproductive Function.*—The nervous system subserves two important uses in the living organism. First, it interconnects the muscular system, furnishing the mechanical conditions under which alone the organic functions can be exercised, and through this exercise preserved from decay. Second, it furnishes a medium between the muscular system and consciousness, by which alone consciousness can direct or affect the body.

From the physiological standpoint, the human body may be divided into two distinct portions: first, the vegetative functions, those of nutrition and secretion; and secondly, the more distinctively animal functions, those of the motor and contractile tissues. This distinction can also be noticed in the nervous system; the sympathetic system being as it were the harness of the former division, and the cerebro-spinal, that of the latter.* But these two divisions of the nervous system must be contrasted with each other in respect to the importance each of them bears to its own tracts. The action of the cerebro-spinal system actually constitutes the animal life of the body, while the action of the sympathetic is limited to controlling and directing the vegetative functions. • The former is more directly associated with self-consciousness; the latter forms as it were only the colouring of the general feeling of personality. It is thus only very partially under the

control of consciousness. 'This is a fortunate, and even necessary condition; for if, *e.g.*, the systole and diastole of the heart were performed consciously, the mind would have no time to attend to other matters, and might, at times, forget to attend to them properly.'

If the task of the two systems of nerves was not a different one, it would not seem ridiculous to suppose that each of them was assigned to one side of the body. But in view of their difference, it is plain that they must both be represented, more or less, in the greater portion of the body. So both systems are interwoven, interpenetrating each other; and while each system has its peculiar central ganglia and connected nerve-trunks, each system distributes its fibres into the nerve-trunks of the other, so as to be peripherally connected and distributed with their ramifications. The consequence is, that those organs which are not directible by consciousness have only one set of nerves, while those which are to a certain extent under the control of consciousness possess both.

Such a function is the reproductive. It possesses nerves belonging both to the sympathetic and the cerebro-spinal systems.

(1) The nerves of the sympathetic system which are distributed on the reproductive function direct the nutrition and secretion of its tissues. Their main ganglia are in the sympathetic system's centre, called the solar plexus. "The trunk and branches of the solar plexus are transmitted in part to the muscular walls of the alimentary canal, from the stomach to the lower end of the colon; in part to the principal arterial branches given off from the aorta, and with them to the liver, pancreas, spleen, and kidneys, as also to the testes of the male, and the ovaries of the female."

(2) The nerves of the cerebro-spinal system determine the voluntary exercise of the reproductive function. It was formerly supposed by Gall that their centres were located exclusively in the cerebellum. But his deductions were based on mere external measurements, and that they were certainly inaccurate appears from this one consideration alone, that the variety of conformations of the skull due to racial difference does not seem to affect the activity of the reproductive function. Besides, the intimate relation between the cerebellum and the cerebrum has not been substantiated.

There is no doubt that these nerves are connected with the spine generally. Olliviers has noticed that erection of the penis occurred in 8 out of 15 cases in which the cervical portion of the spinal cord was the seat of a lesion, and in 3 out of 13 cases in which the seat of a lesion was in the dorso-lumbar region of it. This is $5\frac{1}{3}$ to $2\frac{1}{3}$ per cent. Richard states that electric stimulation of the dorso-lumbar portion of the cord induces erection and ejaculation. Hanging also produces this, making it probable that centres also exist in the cranio-spinal axis of the cord. Jozan tells at length of a case in which paralysis of the lower limbs, being dependent on pathological condition of the spine, determined a serious priapism, which, however, vanished as soon as the paralysis was cured.

There are important generative centres also in the brain. Carpenter cites a number of cases in which lesions or diseases of the cerebellum implied generative disorders. "That in some way or other either the central portion of the cerebellum, or some part of the medulla oblongata, has a special connection with the generative function, appears to be indicated with tolerable clearness by several of the pathological phenomena cited." "The lobes of

the human cerebellum undergo their most rapid development during the first few years of life, when a large number of complex voluntary movements are being learned by experience, and are being associated by means of the muscular sensations accompanying them; whilst in those animals which have, immediately after birth, the power of regulating their voluntary movements with the greatest precision, the cerebellum is more fully developed at birth. . . . The circumstance, too . . . that great application to gymnastic exercise diminishes for a time the sexual vigour, and even totally suspends desire, seems worthy of consideration, in reference to such a view; for if the cerebellum be really connected with both kinds of functions, it does not seem reasonable that the excessive employment of it upon one should diminish its energy in regard to the other." So the cerebellum is considered to be the centre both for voluntary movements and the reproductive function.

2. *The Origin of Secretion.*—The following description of the generative organs is condensed from Wilder's book.

The male reproductive organs are partly contained within the pelvis, and partly suspended between the thighs; this group, including the *penis* and the *scrotum*, containing the *testes*, are hence called *external organs*. The penis is attached to the pelvic bones by suspensory ligament. Below the root of the penis hangs the bag of integument, the *scrotum*; its cavity is double, and each compartment contains the *testis* or *testicle* of that side. The outer and hinder side of the testis is an elongated curved mass, the *epididymis*. The testes measure from one and a half to two inches in length, and from one inch to one and a quarter in width; the weight varies from six to eight drams, the left being usually a little the larger.

The internal structure of the testis is quite complex, on account of the minuteness of the parts, and their great number. These are minute coiled tubes, separated from each other by fibrous partitions. The straighter terminations of these are called *vasa recta*. These unite in a net-work, called *rete vasculosa*. This, above, gives off several *vasa efferentia*, which again by foldings and inter-twinnings constitute the *epididymis*, which is some twenty-one feet in length, a very convoluted canal. This ends below in a single large tube, the *vas deferens*, and this, after rising upon the outer border of the epididymis, ascends, together with the vessels and nerves of the testis, all together constituting the *spermatic cord*. This cord passes through a narrow canal which connects the cavity of the scrotum with that of the abdomen, and is called the *inguinal canal*. The vas deferens ascends still higher to the side of the bladder. Here it turns and ascends again nearer the middle line than the urether of the same side, and likewise becomes thicker and more sacculated. Just at the margin of the prostate, the vas deferens gives off an elongated and pouched diverticulum, the *vesicula seminalis*, which serves as a reservoir of the semen. In order to understand how the vas deferens opens into the urethra, it is necessary to describe the parts. . . . Upon the middle line, and surrounded by the prostate, is a sack-like organ which opens by a slit-like orifice in the middle line of the urethra. This organ corresponds to the *uterus* and *vagina* in the female. And it is hence termed the *uterus masculinus* also the *utricle*, the *vesicula prostatica*, and the *Weberian organ*, after its discoverer. In a few animals, where it is very large, and where the seminal vesicles are small or absent, it is supposed to serve as a receptacle of semen. The vas deferens is about two feet long; its inner or lining

membrane is muscous, and its walls contain some unstripped or involuntary muscle fibres, which give it a contractile power. The vesicula has a similar structure.

The most important element of the testicular secretion are the motile *spermatozoa*, which are involved in the interior of the cells called *vesicles of evolution*, by fission from the parent cells. In this act of fission it is possible to distinguish a male and a female element which, however, coalesce.

Carpenter describes the process of birth as follows: "When the vesicle is completely matured, it bursts and gives exit to the contained spermatozoon; but it is common for the parent-cells to retain the vesicles of evolution, during the development of the spermatozoa within the latter; so that the spermatozoa set free by the rupture of these are still enveloped by the parent-cell. In this condition they have a tendency to aggregation in bundles; and these bundles are finally liberated by the rupture of the parent-cell, after which the individual spermatozoa separate from one another. The spermatozoa are not normally found free in the *tubuli seminiferi*; although they may be there so far advanced in development that the addition of water liberates them by occasioning the rupture of their envelopes. In the *rete testis* and *vasa efferentia*, the spermatozoa are very commonly found lying in bundles within the parent-cells, the vesicles of evolution having disappeared; and they are usually set free completely by the time that they reach the epididymis, though still frequently associated in bundles. The earlier phases are occasionally met with, however, even in the *vas deferens*." The further history of the spermatozoa is given below.

Besides the spermatozoa, the generative secretion, which will in future be called goné, is formed of several

secretions which are formed by the various cells from food-products drawn from the blood. These are the secretions of the epididymis, the vasa deferentia, the vesiculæ seminales, the glands called prostate, and of Cowper, the lacunæ and follicles of the urether. But these secretions are only added later in the process, in their physiological order.

At the time of ejaculation the secretion of the prostate gland, and the testicular secretion are visibly different, the former being colourless, the latter creamy. But in contact with the air they soon mingle. The testicular secretion is itself odourless; the odour of the mature goné probably is due to some of the other secretions. The use of these is not yet certainly known. It is supposed that they both dilute and increase the bulk of the testicular secretion, so as to facilitate its reaching its proper destination. Kraus supposes that the secretion of the prostate gland prolongs the vitality of the spermatozoa. That all these accessory fluids are of some vital importance seems indicated by the alternating increase and decrease of the glands secreting them at the same time as the testes in animals who are only periodically apt for procreation.

3. *The Process of Maturation.*—In the last section the elements of the goné have been indicated. The only doubtful thing in respect to it is the length of time which is occupied in its matured secretion.

On the one hand, there are men who hold with Goizet that the secretion of it takes place in a few moments at the very time of sexual excitation. A dog, although exhausted, will in the presence of the female immediately become active. "It is so true that this force resides in the testicular secretion that as soon as the act of coïtus is accomplished, weariness appears again,

and the dog, a moment ago so vigorous, seeks rest again." So he takes the testicles of animals at the exact time they are most sexually inflamed, as it is only secreted under the influence of the female.

The latter statement is hardly true, as the every-day experience of any man will testify, 'However, it is remarkable that the above theory is hardly scientific in not dealing with the facts themselves, but only with crude deductions which may be in error. Nevertheless, if the above theory be true, three distinct consequences must follow. First, the presence of goné in autopsies performed on bodies which died without sexual excitation like, as in decapitation, would be impossible. Second, it is impossible that at any one time there should co-exist in the vasa deferentia of dead bodies several stages of development of the goné. Third, the development of the goné cannot demand a long time. If any or all of these conditions can be proved to exist, the above theory must be false. But they do exist.

(1) It is a common thing to find goné in the spermatic cord while performing autopsies. Dr. Dieu found goné in the bodies of men of from 60 to 84 years of age. Gardner says of the moving spermatozoa that "in dead bodies they are not infrequently perceptible, even 12 or 24 hours after death (on one occasion Valentin noticed faint motion at the end of 84 hours) and in the female genital organs of mammalia, they exhibit motion even after 7 or 8 days (Loewenhoeck, Prevost, and Dumas)." Goné is found commonly in the generative organs of men who have been hung; but this may be due to compression of sexual centres in the spine. But this can evidently not be the case with men who have merely been decapitated. Richard says: "Living spermatozoa

have been found in the sexual organs of an executed man, more than sixty hours after decapitation.

(2) The co-existence in one spermatic cord of several generations of spermatozoa has been demonstrated by Balbiani. "It is usual to find in one and the same spermatic cord of a rat seminal in three or even four stages of their transformation. These stages represent so many generations of spermatozoa at a more or less advanced degree of development. These generations, which are born at the periphery of the seminal cord, progress more and more towards the centre as they approach maturation. It has been observed that when the eldest reaches the limit of its evolution, that is, when it is composed of already well formed filaments, that a new generation appears at the periphery in the form of little granulous swellings of the epithelium."

(3) It is evident that the process of secreting the normal goné demands a certain time which cannot be hurried. So, among many others, Carpenter says: "The secretion of seminal fluid being, like other secretions, very much under the control of the nervous system, will be increased by the continual direction of the mind towards objects which awaken the sexual propensity. And thus, if a frequent discharge be occasioned, whether by natural or unnatural excitement, a much larger quantity will, altogether, be produced, although the amount emitted at each period will be less, and its due perfection will not be attained, the fluid under such circumstances being found to contain an unduly large proportion of undeveloped or immature seminal cells."

Jozan elaborates this. "This sperma, when examined through the microscope, instead of containing thousands of vigorous spermatozoa, may contain none, or an extremely limited number, almost deprived of movement, and with an

aborted tail. In this liquid may be found little globules of varying thickness, which present in the centre of them a brilliant point ; these are rudiments of spermatozoa, which needed, in order to arrive at perfect maturity, a longer sojourn in their proper cavities."

In view of these three facts it would seem that Goizet's theory is untenable. Nevertheless, the truth in it is well described by Richard :

"The act of copulation has a strong tendency to promote the activity of the secretion of the sperma. During the coitus the muscular elements of the testicles, and some of the contractile fibres which surround the veins of the spermatic cord contribute their share in the action by delaying the flow of the blood in the veins, which produces in the testicles a congestion that is favourable to its functions. Hence there is in the spermatic apparatus a vascular turgescence which is in relation with that of the more particularly erectile organs. . . . The original sperma has the opportunity and time of being mingled with this latter liquid (of the prostate gland) inasmuch as it accumulates slowly in the vesiculæ seminales in the intermissions between sexual embraces. In fact, all the processes which occur in the course described above from the testicle to the vesiculæ seminales, all these processes of secretion and progression of liquids, take place in a slow and continuous manner, presenting only a slightly increased activity under the influence of the genital secretions."

In view of these facts it would seem reasonable to suppose that the process of the secretion of the gonó is at any rate not the affair of a moment. Jozan says that "there are some persons with whom the maturity of the sperma takes place with great swiftness, and with others it demands a long while." Yet "the spermatic secretion, which begins at puberty, is not interrupted for a moment till old age : the

absence of any direct or indirect stimulation, a disease, and accident may indeed cause it to proceed slower, but never does it stop wholly."

4. *The Place of Storage.*—If the process of secretion proceeds slowly, and no external loss of the goné occurs, it is evident that much of the goné must be stored in the spermatic cord for a length of time at any rate. The whole spermatic cord may, in a certain sense, be considered the place of storage. But more particularly it would seem that the vesiculæ seminales were natural reservoirs for the goné, especially as the most mature goné is to be found in their neighbourhood.

Concerning these vesiculæ seminales there is some doubt. Carpenter and Hermann deny that they subserve this use. Hermann says: "Decidedly there does not exist a reservoir for the seminal secretion, such as it was usual to suppose the vesiculæ seminales were." Carpenter says: "It has been commonly supposed that the vesiculæ seminales stand to the vasa deferentia in the same light that the gall-bladder stands to the hepatic duct; namely, as a receptacle into which the seminal fluid may regurgitate, and within which it may accumulate; but, as Hunter was the first to maintain, this is not the case, since the fluid that is found in them is not semen, and but rarely contains even but a small admixture of seminal fluid." Herman indeed advances no reason for his statement; but Carpenter's is hardly sufficient. It is well known that the vesiculæ seminales do contain a secretion of their own which forms an important part of the mature goné; consequently there is nothing surprising that this should be found in the vesiculæ seminales, and that it is perfectly possible for the goné to enter the vesiculæ he grants, inasmuch as he acknowledges that there is a small admixture of it in them. The subjects on which he operated probably had

little goné stored, or he would have found distending these vesiculæ.

Against Carpenter and Hermann stand Wilder, Richard, whose words are given below, Gegenbauer, Hoffman, Foster, and Jozan, all recent authorities. The words of Richard are:

“These vesiculæ seminales seem to serve a double purpose. On the one hand, they act as reservoirs. The sperma secreted by the testicle and driven by the vermicular contractions of the efferent canals, when arrived at the extremity of the latter, finds itself face to face with the opening of the ejaculating canals that possess but slight permeability, and of the vesiculæ seminales which permit easy access. Consequently the secretion enters the latter and remains there until it is driven thence at the moment of the coitus by a contraction of its walls.”

Jozan assumes this to be the case constantly, but says more definitely. “No moral force can stop the sperma from being abundantly secreted in the testicles, from circulating in the vasa deferentia, thus to rise to the vesiculæ seminales, of filling and distending them; in this state it is absolutely necessary that the vesicles shall empty themselves; if it be not voluntarily, it will be involuntarily; the catastrophe will occur at night, in an erotic dream.” Again: “The spermatic secretion. . . is not interrupted for a moment till old age. . . . the vesiculæ seminales are therefore condemned to be filled incessantly, to distend, and empty themselves continually during the virile age. If the sperma does not go out in one way, it will do so irresistibly in another.”

The other authorities consider that the use of these storage-places is to make the stream of ejaculation constant, and to provide its impulses, which the mere vas deferens would be ill-fitted to furnish.

The two authorities which denied that the vesiculæ seminales were storage-places, nevertheless consider the whole vas deferens such an one; and the very notion of a storage-place makes the theory of immediate secretion absurd.

Hermann says: "From now (puberty) on, the sexual secretions are constantly found in the sexual organs. . . . After completed evolution the little seed-bodies remain quite a long while in the sexual organs, which may be inferred from the length of the epididymis. . . . With the exception of the first few years after puberty, involuntary evacuations probably occur but rarely, so that the semen may remain within the sexual organs for months unless the evacuation should take place at the time of the regular functions—a circumstance which is generally considered pathological. . . . In fact, the accumulation of the seed in the sexual organs seems to be an essential element of the activity of the sexual impulse, and thus is of importance to the maintenance of the race."

If the goné is not in the vesiculæ, it is therefore stored up in the vas deferens. In either case, it is stored for some length of time, and by its pressure on the walls of these organs with the thousands of active spermatozoa titillates them, and thus awakens the desire for voluntary emission of them in cohabitation, thus forming the impulse of the sexual life, the power which derives creation onwards to the bringing forth of new being.

But we are not left to mere surmises in the matter of the storage of the goné in the vas deferens or vesiculæ, and in the theory of slow development of the goné, the negative of the immediate production theory. Jozan says: "Nevertheless, there would be no impossibility that a verile man, on whom total castration might have been operated, might not still fecundate a certain number of women. In fact, at

the time of the operation, there is some sperma in the vesiculæ seminales, and as the removal of the testicles does not hinder the penis from acting, a man, in the conditions above mentioned, will still be able to perform several fruitful coiti; but this power will disappear when the reservoir will be wholly emptied of spermatozoa."

5. *The Resorption.*—Having followed the process of the secretion of the goné so far, it would almost seem that the end had been reached. Jozan puts the alternative very clearly: "It is absolutely necessary that the vesiculæ seminales shall empty themselves; if it is not voluntarily, then involuntarily. . . . If the sperma does not go out in one way, it must irresistibly do so in another. Choose between sexual relations, and nocturnal and diurnal pollutions; but speak not of continence. Leave vows of chastity to angels. The man who swears to be chaste does not know the extent of the agreement with himself that he assumes; he would be less daring if he knew that he was swearing to stop an organic circulation over which the will has no mastery. There is no question but that permanent impotence which is not to be imputed to moral causes, or age, or the state of the organs, we repeat it, must be due to daily and insensible seminal losses."

It seems that we have reached a dilemma. Either voluntary or involuntary passage forwards through the penis. But supposing there were a third way out? This is the process of resorption through the lymphatic vessels, which are abundant in the walls of the vesiculæ seminales and the vas deferens.

It is a strange fact that although many authorities imply the existence of a resorption, they do not realize the formal existence of such a process. Hermann for instance, who never speaks of a resorption, says: "If it" (the sexual secretion) "does not reach the usual destination

(the female's ovaries) it disappears. In this manner it brings about the sharing of the male sex in the resources of the fruit. . . . A resorption has been found in 'Cysten,' and in a young ram, by Schweigger; a resorption which is a granular decay of the little seed-bodies. Besides, Kehler has conducted experiments with rabbits by constriction of the vas deferens. He found that about forty days in the not constricted end of the vas deferens that the sperm was still normal, but without motion. After five or six months the seed had disappeared in the sexual organs, and was in process of decay in the vesiculæ."

Noirot: "The resorption of what Dr. Le Comus called a mass of microscopical brains is a source of vigour and longevity."

Goizet admits a resorption, and attributes to this the general manly physical and moral vigour as it is the vivifying agent of young or adult individuals who have active testicles. On the contrary, loss of the goné, and consequent non-existence of the resorption, entails loss of strength, on the authority of Lallemand. Speaking of a male horse, dragging a heavy load, and stalled before a hill, "excited by the presence of the mare, the horse feels its genital organs swell, stretch on account of the production of the testicular fluid, which soon spreads all over the organism; he neighs joyously and ascends the hill without noticing the load which before was too heavy for him."

Even Jozan assumes a resorption, when he is off his guard. "It is in the muscular system that the burning vapours which light the senses and set on fire the whole organism should be made to flow back, having come from it." Treating of cases of obliteration of the epididymis and vas deferens, he says: "The seminal fluid, although it is yet secreted in this case, having no issue, is resorbed as blood in a closed vessel would be resorbed. The

individuals affected with such an obliteration are unfruitful, but not impotent. There is an enormous difference between these two situations, in respect to general health and the exterior appearance of this category of pathological cases. It would seem that, all communication of the testicles with the vesiculæ seminales having been interrupted, the man should be considered castrated, and bear the signs of that condition, that is, that the hair of the chin and of the member should fall, that the voice should assume the shrill tones of an old woman, that the muscles will become soft, and the forms rounded. It is not so: even if the testicles, although useless, exist in the body of a man, he will preserve all the exterior signs of virility, that is, the beard, the low voice, the angular form of the members, the firmness of the muscles. An experiment, repeated several times in Germany, confirms this fact. When the two testicles of a young cock are removed and immediately replaced in the abdominal cavity, they graft themselves on to the peritoneum, and, although they be separated from the organs of generation, the young animal continues to grow with the attributes of the male. His 'ergots' lengthen, his crest develops, his voice becomes sonorous, and he remains the sultan of the yard; he claims its right with the same pride and energy; only he has no posterity; while his young brothers, whose testicles were removed without being replaced in the abdomen, have the forms, voice, and character of 'chapons,' and fatten peaceably, without desires or passions."

The above experiments prove the following facts. (1) The operations above mentioned, either extirpating the vas deferens, or separating the testicles from it, removed the testicles only from the position in which their product could be voided in the usual manner through the urethra, but did not separate the testicles from

lymphatic ducts, through which the resorption takes place, whether they be connected with the vas deferens and vesiculæ seminales, or the peritoneum. (2) The signs of virility depend on the lymphatic resorption of the spermatozoa, not of the other liquid secretions of the vas deferens. (3) Spermatozoa, like blood or any other matter inclosed in a vessel without opening, will be resorbed by the lymphatic ducts.

The above proof of a resorption is so much the more convincing as it is furnished by Jozan, who does not hold that any exists, as, later, Holmes does.

6. *Circulation.*—In the former section it was seen that it was a natural process that everything which was not used was resorbed by the lymphatic ducts; spermatozoa, as well as mere secretion of the parts of the vas deferens, the lymphatic ducts abounding near the vas deferens and the vesiculæ seminales. What becomes of this resorbed matter?

The answer is not far to seek: the same destiny awaits this, as the absorbed food-products from the intestine; namely, to be poured into the blood by the large lymphatic duct immediately after it leaves the heart. The destination of the resorption is then the blood.

Under these circumstances it becomes easy to see how the developments of the testicles can effect the usual virile changes of puberty. The blood nourishes the tissues of the muscles, and makes them firm; it nourishes the muscles which make angularity of form. It nourishes the tissues of the vocal organs, and the roots of the hair of the chin and genital member. Besides, its presence after puberty, as much determines the vigour and power of which Goizet speaks, as much as its absence permits the weakness and diseases which are proverbial, or the absence of the signs of virility in the cases of eunuchs.

The fact that the natural resorption of the goné enters the blood is proved by the fact of the great strength of the Brown-Séguard testicular injection, when injected into the blood directly, and of its comparative uselessness when injected into the anus, or taken into the digestive tract through the stomach. In these cases, it must still make the round through the lymphatic system, which is avoided by the direct sub-cutaneous injection into the blood.

7. *The Nervous System.*—The blood nourishes, however, not only the muscular skeleton, but also the nervous centres. Consequently, besides nourishing the muscles and determining the signs of virility, the rich regenerate blood feeds the nervous centres, and imparts to them its dynamogenetic properties.

The nervous system may be considered as being composed of two different systems: the sympathetic, and the cerebro-spinal. As this name indicates, the latter is divided into two connected portions, the spinal cord proper and the brain. For practical purposes, therefore, the nervous system may be divided into three portions, the sympathetic or involuntary system, the spinal cord, and the brain.

Now, if the blood feeds the nervous system, it will feed each of these three parts.

(1) The blood feeds the ganglia of the solar plexus, which is the heart of the sympathetic system. This will increase the power of all the vegetative functions, the stomach, the intestine, the reproductive organs, the heart, and the lungs. This means perfect health, or at least increased health of these members.

(2) The blood feeds the motor centres of the spine and lower brain. This will assure precision of sight, gracefulness of motion of legs, trunk, and arms, distinct speech, and perfect co-ordination of the body.

(3) The blood will feed the brain itself, increasing memory, mental and moral co-ordinating and acting power, actualizing every power which in other cases would remain dormant, or decay.

The brain, however, does not begin at the top of the spinal cord. Its cavity really descends to the very root of the spinal cord as the central spinal canal, which at the bottom ends in a minute but distinct cul-de-sac.

Of this Holden says: "Running along the centre of the cord, in its whole length, is a minute canal, the central canal, just visible to the naked eye. Below, in the conus medullaris, it ends in a dilated cul-de-sac of the shape of the letter T; above it opens out at the calamus scriptorius, into the fourth ventricle. It is lined with cylindrical ciliated epithelium."

The rich regenerate blood will, in feeding the lower centres of the spinal cord, also feed this, and the increased vigour will, as it were, ascend along it to the brain, considered as a whole, as a co-ordinated organ. This physiological process may be the basis of the highest mental function, considered as a co-ordinated group.

The influence of the regenerate blood on the nervous centres is asserted by Goizet and Jozan.

Goizet, experimenting with direct injection into the blood of testicular secretion reports such nervous improvement, as also Brown-Séquard himself, in sixteen cases mentioned particularly, some of which considerably at length. But Goizet's most important contribution is in regard to several cases of leprosy. "It is well known that in leprosy the alterations of nutrition, the gangrenes, the ulcers, and the pains depend on an irritation of the spinal cord. With this in view it is easy to understand how dynamic changes in the nervous system, and especially in the spinal cord, have been

able to alleviate the inflammation and to produce cicatrizations. From a physiological standpoint, therefore, these facts yield an incontestible and decisive proof of the most energetical action of the spermatic fluid on the spinal cord." Jozan details some cases in which ascarids produced disturbances in the brain, and concludes that they prove the "reciprocal influence of the genital organs and of the brain, both in sleep as well as in the waking state."

8. *The Time of Activity.*—The male genital organs are easily swollen and distended by the blood.* When in this condition, their activity is much greater than when flaccid and quiet. When does this activity occur?

Jozan, for instance, supposes that it only takes place when the proximity of the female or lascivious thoughts awake the sexual nature. If this were the only cause, and it were shown that health depended to a certain extent on the resorption, it would seem that health depended on merely accidental circumstances.

But although these accidental causes do certainly excite the sexual nature, there is also a natural period for the activity of the testicles. This occurs every morning, just during the last sleep, which is on this account the sweetest and deepest. Any person can experience this consciously by remaining awake thoroughly from one day to another. It often happens in the neighbourhood of 6 to 7 a.m. Doubtless, individual peculiarities and circumstances may vary this to some extent.

In this wise there is a regular resorption, strengthening the body for the work of the new day. To this is due that virile brightness, that poised self-consciousness and clear intellectual insight which returns every morning,

in normal circumstances. It is a mistake to attribute this wholly to sleep. For it is evident that it is to a certain extent more to the advantage of the brain tissues that they be fed even for a short time by regenerate blood in waking hours during the morning, than for a whole night on comparatively impotent blood in brutish sleep.

9. *The Duration of the Periods.*—There is a period in the development of the resorption coinciding more or less with a lunar month, namely, twenty-eight days, or thereabouts. In the case of woman, the period is so clearly marked by external symptoms that there is no doubt concerning its existence. At the crisis of the period the Graafian follicle is ruptured, and one or two ova are borne away by the sanguinary torrent. Depletion of vital force is marked so plainly that none can deny the causal connection between the two symptoms. This period, however, exists also in man. Its external symptoms are less marked, but just as regular as in the case of woman.

That there is such a monthly period in men as well as women is held by Julius Nelson in an article entitled "A Study of Dreams."

"The table at the close of the paper shows the numbers from which the curve has been constructed. The nature of this curve, and the fact that it was plotted for a menstrual period, requires that we compare it with a curve representing the sexual condition. In the human female we have presented the monthly phenomenon of the katenenia, lasting nearly a week. This phenomenon has relation to the functions of reproduction. Although the phenomenon is still not thoroughly understood, we have data to show that during this period one or more Graafian follicles burst

and set free ripe ova which are passed down the Fallopian tubes, and if fertilized remain to be developed in the uterus. The cause of the bursting of the follicle is due to a congested condition of the ovaries or a heightened blood-pressure in them and accessory structures which may account for the uterine hemorrhage, but coitus may probably accomplish the same effect and thus prevent an impending menstrual flow. At any rate, after the flow has ceased, an ovum is present in the tubes or uterus, most favourably placed as regards fertilizability, and it is well known that the female is more erotic and irritable at this time. The physical cycle is accompanied by marked psychological characteristics that gradually increase up to the period, and after a temporary decadence during the flow present a sharp climax a week later. We shall term the first climax the minor climax, and the second the major climax. . . .

“It would only seem natural that the male should also show a sexual period corresponding to that in the female, and that in well-matched couples the climaxes would coincide. Concerning this point we read in Foster’s *Physiology*, ‘Within the year an approximated monthly period is manifested in the female by menstruation, though there is no exact evidence of even a latent similar cycle in the male.’ On the other hand, in Dr. Hammond’s ‘*Treatise on Insanity*,’ published the same year, we read, ‘Gall contended that there was a periodical manifestation in men analogous to that existing in females;’ and Lévy holds a similar opinion. The latter states that ‘young and robust persons do not notice this tendency unless their attention is specially directed to it, but men feebly constituted or endowed with a great degree of irritability, or who have reached the

period of their decline, perceive the alteration which their health monthly undergoes. . . . The feeling of discomfort is general and inexpressible, and the mind participates in it, for it is more difficult to maintain a train of ideas; a tendency to melancholy, or perhaps an unusual degree of irascibility, is joined to the indolence of the intellectual faculties. These manifestations persist some days and disappear of themselves.' I have certainly noticed in some of my friends this tendency to some monthly periodical abnormal manifestation. . . . I think, this is much more common than is ordinarily supposed, and that careful examination or inquiry will generally if not invariably establish the existence of the periodicity of the character referred to.

"In my experience, young and robust persons are subject to recurrent periods of wakefulness at night, which, when they coincide with the full moon, are attributed to the action of its light. Undoubtedly the light of the moon has an independent action of the sort; but if Mantegazza's theory be correct, that the sexual period became established with relation to the lunar period because moonlight nights were favourable for courtings, there is a strong association existing between the moon's light and the psychic sexual functions. However, long ago the period became so firmly established as to run independently of the phases of the moon, and even to vary from its length so as to have a precise relation to the moon's phases. The influence of that old institution of the Sabbath must have had a powerful effect in fixing the period at 28 days, but this period is easily influenced by exciting or nerve-depressing causes, the former shortening the interval, and the latter delaying the period, or even preventing it to a great extent.

“In the male, as in the female, the maturation of the reproductive elements is a continuous process, though we may hardly say that it is not influenced by this mensal periodicity. It certainly is influenced by many incidental forces, such as food, temperature, exercise, occupation, sexual excitement, and so forth. But here, as in physics, we ought, I think, to consider each force still acting and producing its proper effects, though the resultant may fail to reveal the direct action of any one element at a particular time. The mensal period is a steady force, the others are accidental and variable in time; hence if we take a sufficiently long period, and summate by months, the disturbing forces will largely equate their effects, whereas the mensal forces will thus reveal its true action. The presence of the reproductive element exerts a constant stimulus upon the brain cells, which causes them to generate characteristic dreams that in turn react to produce expulsion of the gametal cells. This gonokbole will be more frequent at a period when the psychic cells are most irritable. . . . and furnished data for plotting the sexual curve in the case of the male. . . .”

Although the facts of the lunar period in man be established, yet their explanation remains in the dark. Mantegazza's theory seems unsatisfactory on its face. In the first place, if the lunar period arose from connection with the monthly full light of the moon, they, the periods, could not have become dissociated from it without likewise becoming destroyed. In the second place, if that were true, the periods of all human females should occur at one and the same period of the month, which, however, is not the case.

There is another theory, which investigation may legitimize. The lunar periods for any individual occur

always when the moon enters the even hours of the sidereal time or in other words, enters each sign of the Zodiac. If the series of lunar months be projected backwards, it will be found that there is an exact number of lunar periods reaching to the day and hour of birth. Thus the moon was in that sidereal hour at the time of birth in which it produces the periods regularly ever after, unless disturbing causes should occur. This can be verified in all cases by the aid of the ephemerides of the moon for the past years. While the period is always one exact lunar month, yet the period begins at a different time for almost each individual. If the lunar period dates from the moment of birth, then of course it must differ for all men, except in the case of twins, born at the same time, with whom the periods occur simultaneously.

10. *Sidereal Circumstances.*—However true the latter observations may be, if the investigator has the patience to make the experiment on himself, it is not unreasonable that he should ask for some explanation of the process. The great majority of men, so called scientific, are so unscientific as to condemn this theory without investigating it. The following considerations will therefore be of use only to those who desire to investigate the matter for themselves.

If the law of Conservation of Energy means anything, it means a coherence of all existent things, in other words, every cause, however infinitesimal it may be, has a chain of effects which in some manner affects the whole universe. Every part of the universe is thus correlated to every other part; hence, in one sense, every one thing is related to every other.

Take, for instance, the moon, which, although so far away, yet plays so important a part in the tidal

changes of the ocean. Besides, it may play an important part in the rising of the sap in the trees, and, whether it be true or no, the influence of the lunar ray on the human brain during sleep has in popular opinion been held to for centuries. Hence the connection of insanity with the words *lunacy* and *moon-struck*. At any rate, the lunar ray is at times powerful enough to produce colour-blindness.

The sun exerts an influence so strong that none will deny it. The difference between the moods of the same person on a fine day or on a cloudy one is an experience too common to need proof. Besides, were it not for the sun, all vegetation would stop, as is shown by the heroic feats of plants, even to pick their way through walls to arrive at the sunlight.

Not only the flora, but also the fauna would decay without the light of the sun, and robust health cannot be attained without it, witness the sun bathing at summer resorts. Of course, the most powerful influence of the sun, moon, and earth, namely, their mutual attraction, is not noticeable by the immediate senses of man, but none the less, were these factors to change in the least degree, it is not improbable that animal life would become extinct immediately.

In view of these facts no man, much less a scientist, will deny that every sun, planet, and constellation contributed its share to that resultance of forces which is called their equilibrium. If, then, it is not unreasonable to hold that the sun and moon exert powerful influence over all the earth, why should not the other planets, and in point of fact all the other heavenly bodies, so much more gigantesque than the moon as they are, contribute their share of influence on the welfare of human life? The one supposition is as

logical as the other, so that if the one be rejected, the other should also be denied; but as no person seriously thinks of denying the first, there is no reason why persons of judgment should not accept the latter.

Now, taking all this for granted, the question may be driven one point further. If the law of Conservation of Energy, shows that the heavenly bodies have more or less influence on the earth, its climate, and its biological processes, why should not human beings be equally subject to their influence? The psychologist, the physiologist, and the anatomist consider the human frame a machine, wholly subject to the law of Conservation of Energy. The body of a man is practically part of the physical matter around him, and should share in its limitations. Hence there is no proof that demonstrates the influence of the moon on the tide and on vegetation, that at the same time does not recognize the participation of man in it, in conformity to all natural laws. As his body is subject to the law of gravitation, so will it also be subject to the law of chemical affinity, magnetism, and any other more spiritual influences, if there be any.

There is, however, one point of dissimilarity between the human organism and vegetation or the ocean; it is more highly differentiated. Now, the more a being is organized, the more delicate, subtle and mobile are its life processes, and, therefore, the more easily affected is it by the more demonstrable influences of the attraction of the heavenly bodies, and also by any more refined influences, if there be any. Hence it is probable that the human organism will be more affected by any cosmic influences than by the less differentiated vegetable, or low animal organizations.

Under these new circumstances, the burden of proof

lies on him who denies such influences, and the task of him who proposes, in the teeth of the law of Conservation of Energy, to separate one part of the universe from the other, as far as sympathetic coherence of all things goes, will not be an enviable one. On the other hand, the student must be careful not to assert anything concerning these which he cannot demonstrate. It is sufficient, however, that the above considerations have shown such influences to be probable. In many cases, those sidereal influences are to-day recognized in physical science, as, for instance, the formerly unaccountable variation in the path of Uranus, which led to the discovery of Neptune. This instance will further illustrate the fact, that the recentness of the discovery of such influence need not militate against its actuality, especially in the case of spiritual influences, the prejudice against which has so blinded otherwise honest investigators that the matter has been left in the hands of quacks.

There is no need to call the study of these sidereal influences, astrology. This word had best be dropped, because for centuries its associations have been most disgraceful, and the so-called *astrology* still proceeds on the geocentric theory. An impartial investigation is needed in order to ascertain what of it is true; and the scientist should remember that there is for him only one disgrace, that of partiality.

So far the student has been invited to investigate demonstrable facts, and he should remember the difference between these and a working hypothesis. Whatever follows should only be taken as a provisional hypothesis, as a help to independent investigation, and which is to be cast aside when any facts inconsistent with it are discovered.

II. *Monism*.—The first step which the inquirer after

a rational theory of the universe must take, is the adoption of a satisfactory working ontology. Here is matter on the one hand, and mind on the other; are these two different entities, or only two different aspects of one and the same? •

This is the question at issue between dualism and monism. This question was decided in the minds even of ancient thinkers who started with the identification of consciousness in man, and descended along the line of evolution in the animal world, down to the *Venus fly-catcher*, which is half way between the animal and vegetable world; and then by gradual descent along the vegetable world, and through the vegetable world to the simplest protoplasm, and then by insensible gradations to the elements of the inorganic realm. The student would find it a difficult matter to place his finger on the exact spot where he opined consciousness ceased to be connected with matter. True, this elemental consciousness which might be supposed to correspond to the inorganic elements might be so different from what consciousness is understood to be among human beings, that it might not unreasonably be denied that name. Yet, in a certain sense, it might distinctly be called a consciousness, at any rate, if the relation between mind and body, in a human being is interpreted as monism. This would seem very reasonable; but, this once granted, there is no possibility of avoiding the ultimate conclusion of ascribing consciousness to the tiniest atom, or vortex of energy. This cosmology differs but little from that of the more rational Neo-Platonists, who believed that matter was the last and grossest emanation of the divine, creative, eternal mind. It is a philosophy which is an optimism, and which leads naturally to the Stoic assumption that every atom has a corresponding soul. So each star, and planet,

and the earth itself possess corresponding intelligible sides. Nor need this seem to be far fetched. The light of the sun not only gives tonicity to the physical vitality of man, but also cheers his mind, and enables him to look on the bright side of things. In this case, at least, it will not be disputed, that the physical life bears within itself a counterpart which acts upon the spiritual part of man just as the physical light acts on his body. If this be granted, there is no reason why the same influence should be not attributed to the other planetary and stellar conditions.

It is impossible at this stage to discuss intelligently the bearing of these doctrines on the question of predestination, fatalism, and irresponsibility of the human slave of fate. Let it suffice that these doctrines are not involved in Monism as a necessary consequence; they only furnish the delicately adjusted circumstances which man may use, abuse, or neglect.

In order to explain more fully the cosmological bearing of Monism, it will be necessary to treat of the subject in two different sections; the one relating to the planetary, and the other to the stellar influences.

Of course, any philosophy which hopes for perpetuity, must accommodate itself to facts; it is needless, therefore, to say that the basis of all calculation must be the researches of the best astronomers. The geocentric theory must at once be abandoned.

12. *Stellar Influences.*—Neglecting for the present the solar cycle, which is so huge that there is no reliable means of discussing it, it would seem that the Earth performed her annual revolution around the Sun in the orbit of an ellipse. From the Earth it would seem that the Sun performed a revolution in the line of the ecliptic, traversing the twenty-four hours of sidereal time, assigning

two hours to each so-called ancient *sign of the Zodiac*. To avoid much of the useless and sometimes insane speculation which the names of these signs have given rise to, it may not be unwise to dismiss them once for all, substituting for them the more scientific nomenclature of the first, second, and third pairs of sidereal hours.

It is not the Sun, but the Earth, which performs the annual revolution, through the sidereal hours; consequently through this yearly journal the earth bathes herself successively in the twelve atmospheres of the twelve pairs of hours.

If the argument of the monistic theory has been understood, it will be easy to grasp, that while the physical Earth passes through the physical atmosphere of the hour-ocean, the intelligible side of the Earth likewise passes through the intelligible side of the atmosphere of the hour-pairs.

There would seem to be no difficulty in this much; but when the question presents itself, "What is the nature, or mental characteristic of each of these hour-pair oceans?" the student may well bethink himself.

In such a question a great deal of latitude must be permitted to the inquirer, and the writer repeats that anything he states must only be taken provisionally, until replaced by something more certain.

It is barely possible that the following is an approximate account of the state of affairs. If the human consciousness can be taken as the norm of consciousness, then all other consciousness, as far as it is consciousness, must correspond to it. Now, human consciousness has four characteristics. (1) It has the power of self-reproduction; (2) and of self-preservation; (3) it needs change and contrast; (4) and is of an intelligible nature.

This may in certain ways correspond to the tempera-

ments of men who differ by the fact, that either their brain, their heart, their reproductive organs, or their limbs possess so much more power than their other organs, as to characterize their whole being. This may constitute what is often called *temperamental* differences.

Connecting the idea of the yearly cycle of the seasons, and that of the temperaments, an interesting result might follow, but which scientific investigation would have to substantiate. Identifying the season of autumn, the season of the maturation of seeds, as the preponderance of reproductive elements in animal and vegetable life; winter, with that of cold intellect; spring with that of practical action or development, and summer with that of self-preservation, when all plants are growing and self-preservative, it would appear that the inquirer had reached a conclusion which was fanciful. And yet a moment's reflection will show that if it be true that these four are the most important characteristics of consciousness, and if matter is by the necessity of thought proved to be only a common sub-conscious form of nascent consciousness—this conclusion being supported by Janet's conclusion that sensation and physical motion of matter are only different forms of appearance of the same reality—then it would appear necessary to ascribe to the earth the characteristics of consciousness, only objectified, so to speak. Autumn is the time of seeds, winter of the rest of the physical forms of life; spring the time when activity of all kinds awakes again, and summer the time when existing vegetation lives by exercising the instincts of self-preservation. Here are the four characteristics of consciousness, reproduction, self-preservation, change, and intelligibility.

If it be true at all that consciousness pervades the interstellar oceans, then it must possess the same charac-

teristics, and it will also be natural that each quarter of the interstellar spaces is characterized by the preponderance of one of these four elements, so the first six sidereal hours may be characterized as intellectual, pertaining to practical action or development; from six to twelve o'clock, by the self-preservative element, well exemplified by the blooming plants; from twelve to eighteen o'clock, the reproductive element; and from eighteen to twenty-four o'clock, the cold intellectual element. These four quarters will correspond to spring, summer, autumn, and winter, respectively. Each of these quarters of the ecliptic can again be sub-divided into three hour-pairs, each of which will yield shadings of the general characteristics of the respective quarters. The first might perhaps be more physical; the second, more mental, and the third more spiritual.

If any of this be at all true, then it would follow that when children are born, their physical body is inherited from their parents, but their intelligible body would be composed of part of the interstellar atmosphere, through which the earth was passing at that time. So all children born in the same interstellar atmosphere would have certain characteristics alike, and by knowing the date of their birth, it would be possible to predicate certain dispositions of them.

The natural inference would be, in any case, that each temperament or disposition would have certain *faibles*, certain besetting sins, certain natural virtues. This would have much to do, if true, with praising or blaming men for their actions.

13. *Planetary Influences.*—The planets, like all things, have their intelligible side, and wield an influence so much the stronger as they are nearer the earth. Mercury, it is barely possible, has some influence on the reproductive

organs ; Venus, on the instincts of elegance, beauty, and devotion ; Mars, on the natural instincts of parental love ; Jupiter, on the artistic and emotional sublimity ; Saturn, on the religious tendencies ; and Uranus, on the more subtil and refined personal influences.

Thus, since the planets are ever moving in orbits of different periods, never at any two moments is their total influence exactly alike, nor ever will be ; so that although children born while the earth was in the same interstellar atmosphere, have their basic characteristics alike, yet the never-repeated positions of the planets and the moon assure each child of a nature slightly different from that of any other child.

So far the writer has only dealt with the stellar and planetary influences as occurring at the birth of a child. If it be true that these stellar and planetary influences also irrevocably fix the whole course of the individual's life till death, the writer has no facts to substantiate such a theory. He does not question that others, better informed, and more impartially scientific than he, may be able to prove that.

14. *Connection of Cosmology with Regeneration.*—By this time the reader may ask himself, What connection obtains between the subject of the last three sections and Regeneration ? Although possibly not aggressively obvious, the relation is a most intimate one. In the first place, man is a part of the universe, and can never, thanks to the law of coherence of all things, save himself, that is, change himself for the better, without in some degree affecting the universe for good. In the second place, if he would change himself, he must utilize all the resources of the universe which lie within his reach. In the third place, in order to change himself for the better, he must know himself, and the universe, or he could do

nothing. Lastly, experience has demonstrated to those who have been willing to investigate impartially, that the seminal germs are born, matured, and transmuted, at times predictable for years ahead, when the exact position of the stars, earth, and planets at the hour of birth are known accurately. This does not mean that the germs are not in danger before they are transmuted. This is the problem which each man has to work out for himself, success being the only test of rationality, and efficiency of the means employed. But although a knowledge of the positions and significance of the planets does not guarantee against the loss of the germ, yet it predicts for years ahead what the most dangerous nights are on which, unless extreme precautions are taken, a loss of it will inevitably take place. This is the fruit of the experience of a great number of people who have undertaken this struggle. Hence, nothing pays better than accurate knowledge of the stars and planets; a knowledge, which, in any case, can do no harm.

The writer, however, feels that his duty would not be done if he did not warn the reader of the danger of what is generally called Astrology. Where possible, use should be made of the Nautical Almanac, observations through the telescope, and a liberal course in mathematics. Until the necessary tables are annually compiled by reliable scientific authority, each man will have to rely upon himself, utilizing the most accurate tables he can secure. At the present time the Nautical Almanac is the best authority.

For the use of any who would care to observe themselves and make scientific records, the following data are suggested, with no claim of infallibility, however.

(1) The psychic germ is born when the moon is

apparently in that hour-pair where the earth was at birth, viewed from the sun.

(2) It matures from then until two or three days after the moon has left the hour-pair in which the moon was at birth.

(3) At each successful transmutation, the next germ transmutes one hour-pair later, and finally there will be a germ maturing all the while.

(4) Especially dangerous seasons are when any heavenly body is in the hour-pair in which the earth was at birth, the moon was at birth, and again the third hour-pair after the one in which the earth was at birth. Also the following sidereal hours are pretty nearly dangerous to all people. Six o'clock, or sixty degrees; fourteen o'clock, or one hundred and eighty degrees; twenty-two o'clock, or three hundred and thirty degrees.

These strictures are not original; they are only offered in this form in the firm belief that this knowledge may be of use in bringing many souls to a knowledge of their divine dignity and to personal communion with their Father in Heaven. He that hath ears to hear, let him hear.

To those who cannot receive these things, and who blame the writer, he would say, To his own master the servant will stand or fall. If any errors have been committed, they are involuntary, and the writer would be grateful for any corrections.

CHAPTER IV.

REGENERATION IN PRACTICE.

1. *First Proof of Regeneration: Virility.*—The first and most evident proof of the importance of the testicles to the welfare of the personality is the notable difference between normal and castrated individuals.

With the exception of the presence or absence of the testicles, all male individuals are in other respects, if normal, alike. It is plain, therefore, that the presence of the testicles' function must be the determining cause of the difference.

The normal changes at puberty are too well known to need mention: the change of voice, the growing of hair on the chin and body, the firmness of the muscles, the angularity of form, all these are well-attested facts, which lie within the experience of every individual.

The alteration which occurs in individuals who by sickness or otherwise have been deprived of the normal action of their testicles is well known, Goizet among others describes. Couper says, speaking of the sperm, "Its effects, after it is generated, even upon the male demonstrate its activity and influence far beyond the precincts wherein we believe it to be accumulated. After puberty the secretion of it during even indifferent health, is continually going on; and those collections of it in its reservoirs are reabsorbed and mingled with the general mass. What is actually reabsorbed before the period of puberty, before the system has been habituated to it, or

saturated with it, produces very curious and remarkable effects over the whole body; and the proofs from castration as well as general observation are always at hand to confirm this opinion. The flesh and skin, from being tender and delicate and irritable, become coarse and firm; and a new existence seems to take place—the body in general losing its succulency. The voice, a proof of the tension and rigidity of the muscular fibre, losing its tenderness and inequality, becomes ungratefully harsh; hairs are protruded on parts equally smooth with the rest of the body, though we cannot see the causes of selection of the places of their growth: and the mind itself, as we have already observed, actuated by the progress of the body, and forgetting all its former inclinations and attachments, acquires distinctly new propensities and passions. . . . These changes are not entirely the effect of ordinarily progressive age and strength; neither are they promoted by intercourse with the world; for castration will anticipate them and premature venery or even gradual familiarity and early onanism will diminish them, and in the debilitated may go far in extinguishing them. Boys who have been subjected to castration never acquire either that strength of body or capacity of mind which dignifies the completed male; and the same cruel and unnatural operation performed on brute animals diminishes their bodily strength and the fierceness of their tempers [e.g., the ox], and even their odour, which is oftentimes noisomely strong, by this operation is almost taken away. . . . It is to this cause, this absorption of the male semen, whether impregnating or not, that we must look for the explanation of those general changes which are produced in the female by coition. The act of coition will go but a little way in accounting for those changes; and its extent may be

judged by the effect of those disgraceful means of gratifying lust which abandoned women have discovered and practised." Harvey's authority for this. "Rabies, variolæ, syphilis are rapidly and powerfully propagated by an almost invisible quantity of their different and original contagions. . . . Many of these diseases, however far by their destructive tendencies they may contribute to the order of nature, induce material and salubrious alterations in the human body. . . . Delicate females often become plump and robust;—that the beautiful and active fade in their strength, their texture and their vivacity; that the widow or married woman deprived of commerce with her husband gradually returns to the imperfections and peculiarities of single life; and that the ancient virgin is generally consumed with infirmity or disease?—The alteration of temper in women, especially when unfortunate in coition. . . ."

Richard says that "those persons who are cryptorchids are of mean stature, a pale complexion, a fine skin, blond hair, very spare beard, the voice weak and sharp; they are not very energetic, and rather timorous." In short, they have all the traits of eunuchs. These cases are extremely interesting, inasmuch as everything takes place with them exactly as with normal individuals, with the exception that the secretion contains no spermatozoa.

The voice of the castrate does not change, and no other theory but the dependence of this on the absence of the testicular secretion can account for this fact, as Masson says, and Richard also. The latter says:

"(Castrated persons) feel none of the changes of personality which are characteristic of puberty, and resemble women faintly both in point of physical develop-

ment, in point of the weak moral fibre, and in point of the voice, which remains high. About the eleventh century castration was introduced into Italy, and especially in the Roman States, in order to obtain a particular kind of singer, the castrates. It seems, for the matter of that, that this tradition has perpetuated itself in Rome till modern times. An eminent composer says that in his youth his excellent voice put his genital organs in very grave danger. He owed his salvation only to the energetic intervention of Rossini, to whom he vowed eternal gratitude."

Now in view of these facts, only one interpretation of them is possible. The presence of the testicles as mere tissue could not affect the whole system so generally and so radically. It must be the product of their activity. But it appears that the effects of this activity are visible in the most remote portions of the organism, so that it becomes important to ask, what processes constitute the means between this cause, and the apparent effects? These cannot be independent of the secretion, inasmuch as castrates do not have these phenomena; therefore we must ask how can the secretion alter the tissues of the throat, the muscles, and the skin?

As a usual rule children at the time of puberty have not had connection with women, and with the exception of those addicted to masturbation, they are unlikely to lose much sperm. Therefore it would seem that the secretion began at the opportune moment, of itself, and progressed slowly, constantly, and apparently disappearing when mature, while still in the vas deferens, or the vesiculæ seminales. This of itself is an argument against the theory of immediate and exclusively sexually causes secretion, for the secretion begins of itself whenever the conditions of the organism permit it to assert

itself, and continues slowly for some time, producing marked organical changes.

The question remains, If, on the one hand, it is certain that these organic changes are due to the product of the testicles, and if, on the other hand, this seems to disappear in the spermatic cord, there can be but one conclusion, that in some manner this disappearing secretion reaches the organism generally, and especially the parts affected. But as the blood is the only means of intercommunication between the members of the organism, and the only physical connection between the blood and the interior of the vas deferens, or vesiculæ seminales, is the lymphatic system, there can remain no doubt but that this is the road by which the disappearing secretion effects the distant effects.

2. *Second Proof of Regeneration: Old Age.*—The proof from castration is, however, not the only accessible one. There is also the proof from old age, which incidentally confirms the theory above assumed that the mere presence of the testicles as so much tissue cannot bring about the vital changes that occur at puberty. For in senescent organisms, the tissues of the testicles remain intact, but they cease, more or less, to produce their secretion. And as soon as this occurs, the body begins to decay; slowly indeed at first, but after the table-land of middle age has been left behind, the slope becomes daily more precipitous and rapid.

Noirot devotes many pages to show that continence prolongs life, and incontinence hastens old age. So the canary, according to Hovieux, if permitted to raise offspring yearly, lives not more than 8 or 10 years, while the celibate bird has survived 24 years. Goizet details minutely four cases of simple senility in which injection of the testicular secretion caused a return to

the virile age. Similar experiments have been made and reported by Loomis and Hammond of New York, Brainerd of Cleveland, Dehoux of Paris, Gregorescux of Bucharest, and Villeneuve of Marseilles. Brown-Séquard had the case of senility in view in beginning the practice of using his vaccin, and he expresses himself thus on the subject: "The idea which has guided me in these experiments was that the weakness of old age depends largely on the diminution of activity of the spermatic glands. I believed and still believe that the facts which I have published prove that the vigour of the nervous centres and of other portions of the organism is bound up with the swiftness of the testicular secretion process. This granted, it would seem natural, that in adding to the blood of an old man by sub-cutaneous injections a fluid extracted from the testicles of young and vigorous animals, it would be possible to supply the insufficiency of his own spermatic secretion-process, and to increase the activity of that process,

3. *Third Proof of Regeneration: Vitality.*—The proofs from castration and old age may be supplemented by a third, one which appeals to every person, by virtue of forming part of his experience. It should not be hard to judge of the importance of the sperma from the effects of retention of it, and of ejection of it contrasted.

(1) The pathological effects of the loss of the sperma is well seen in the well-nigh hopeless ravages of onanism or masturbation. They are so terrible that it is both impossible and indecent to recount them. Over the gate to their domains may well be written, All hope abandon, ye who enter here. Words are too weak to portray the evil, and its frightful universality is well instanced in the numberless advertisements of quack

nostrums for its cure. Yet the following words of Mercier may not be out of place here: "The function of reproduction has by its very nature a disintegrative deteriorating influence upon the organism in which it occurs. Down at the bottom of the scale of life, in the simplest organisms, reproduction is effected by fission." (In the case of the gregarina), "the performance of reproduction is attended by the entire destruction and disappearance of the parent. The individual ceases to exist as an individual, and exists only in its offspring." . . . (In high mammals and man) "the whole life of the parent is not lost, but a part of it is lost. . . Hence the reproductive act has an effect on the highest regions of the nervous systems which is of the nature of a stress, and tends to produce disorder." . . . (In the male) "the repeated loss of energy eventuates in a state of anergy, apathy, lethargy, and dementia. The tension of energy in the nervous system is reduced to the lowest ebb, and all the manifestations of existence of this energy are wanting or are exhibited in the feeble and perfunctory shape. The condition is one of dementia. . . . there is want of mind, the inability to perform mental operations of even moderate difficulty, the dulness and slowness of feeling, the loss of all the higher emotions and of many of the lower ones also, that characterize dementia. There is the deficiency of movement, the absence of muscular exercise, the inability to make exertions that are at all prolonged or continuous, the general degradation of conduct, the loss of all the higher attributes of humanity, and the retention of all the lower and more animal characteristics. Such are the results of the indulgence of the sexual passion in great excess. When the indulgence is less excessive, the degradation is less profound, but in every case there is degradation, and in every case

the deterioration is of the nature of dementia, that is to say, it is a manifestation of deficiency in the amount of stored energy. . . . Besides those cases in which the dementia so produced is sufficiently pronounced to incapacitate the wretched individual for the duties of life, and to render it necessary to commit him to asylum care, there are an enormous number of cases, forming together a considerable proportion of the total population, in which premature decadence of the mental powers, premature exhaustion of the energies, premature inability for vigorous and active exertion, result from excessive sexual indulgence in early life. The young man, full of vigour, boiling over, as it were, with energy and activity recently loose from the restraint of school or college, unaccustomed to control himself or to deny any gratification, launches out into excesses which at the time appear to be indulged in with impunity. But sooner or later comes the day of reckoning. He has felt himself possessed of abundant energy, and he has dissipated it lavishly, feeling that after each wasteful expenditure he had more to draw upon; but he is in the position of a spendthrift who is living on his capital. Had he husbanded his resources and lived with moderation, the interest on his capital would have sufficed to keep him in comfort to old age; but he has lavished his capital; lived a few short years in great profusion, and before middle life he is a beggar."

There seems no need to enumerate the manifold diseases which are due, or which follow in the train of ejection of the sperma in greater or less quantities. Farther on facts bearing on this subject will be detailed; for more, see La. lemand, Tissot, Jozan, and Goizet.

(2) While the consequences of the loss of the sperma entails such dread consequences as are detailed above,

it is impossible to trace a single disease to preservation and subsequent resorption of it.

It has been said, however, that continence bears much harder on spinsters than on bachelors. It results in that mild form of insanity which is called *being peculiar* or *queer*. But this objection is hardly fair. This *queerness* is not due to continence, but to the solitariness of life to which our present social conditions often condemn a continent women. Spinsters who live with others, and take care of children are as little *queer* as wives who live alone become decidedly peculiar. Bachelors do not become so queer as spinsters, both because their avocations often keep them in touch with their fellow-beings, and because the existing *double standard* of morality by no means signifies that all bachelors are continent.

There is a more serious charge, that of direct insanity.

On this subject Richard says: "The predominance of insanity among celibates has been held by Girard, de Gailleux, Dagonet, Griesinger, Parchappe, and others. Nevertheless, this opinion is very questionable. Celibates are far from depriving themselves of the pleasures of love, and consequently it is necessary to seek elsewhere the explanation of the great number of insane celibates. Verga points out how in many cases tendency toward insanity manifests itself in children and young people, and thus creates obstacles to their marriage. Hence the relations of cause and effect between insanity and celibacy seem to be reserved, for it is not rare that persons in whose family circumstances have made insanity hereditary, or probable, knowing their heredity are disinclined to marry. But it should be also considered that the greater part of celibates do not enjoy the privilege of the married of having calm and systematized lives, and the joys of family. If celibacy plays any part in

the production of mental diseases it is within the sphere of such reasons that the cause should be sought, and not in the manner of the function of the sexual organs." Jozan adduces the case of a man who became violent until quieted by loss of sperma; but "it is a question whether the man was not predisposed to insanity, and was only quieted because sufficiently weakened."

On the contrary, absolute continence produces uniformly good results. Goizet says: "Men who are well organized, from twenty to thirty-five years, who for one reason or another remain absolutely without sexual communication, or expense of sperma, due to any reason except that of an occasional erotic dream, are generally in a state of excitation, accompanied by a mental and physical activity, which may be morbid, but at any rate is very strong."

This state of excitation is corroborated by Mayer, in the following words: "The accumulation in the secretory organs of the materials of generation. . . . produces a state of sensibility and of surexcitation of the nervous system."

Nevertheless, the state of continence means perfect health, more or less. And when it is contrasted with the horrible decay of the ejection of sperma, it would seem that there was not for a sane or reasonable man even a question of choice. There all evil, here all good.

(3) There is, however, the position of indifferentism that should be analyzed.

Holmes, for instance, says: "Occasional occurrence" (of nocturnal emissions) "is of no consequence. More than once a fortnight, they deserve attention."

Jozan goes further. "These evacuations have generally no alarming feature; when they are the expression of a real need, they are followed by a general feeling of

well-being; the head is lighter; the ideas are clearer; all the wheels of the organisms seem to have been oiled; the lungs work easier in the chest; all the movements are freer, more skilful, and quicker. Spermatic plethora reproduces itself with fair rapidity with young men who have escaped the desolations of masturbation; a general state of irritability, troubles and inexplicable anxieties agitate them; their character becomes harder; they become impatient and irascible; others give way to sadness and melancholy; they are dreamers, they seek solitude, and shed tears; they are apathetic and still agitated; sleepy but unquiet; their head is heavy, but ferments; some grow disgusted with life, and seek suicide; others have immense aspirations, giant passions, and so forth. A pollution which may well be called critical ends all these disturbances, and re-establishes in a moment the harmonious equilibrium of the organs and functions."

There is no question but that absolute continence does produce a nervous, sleepy, excited state. But this is due only to the superabundant vitality just beginning to enter the blood by resorption. A little physical exercise will assist the general circulation and facilitate the desired process, after which a great increase of mental and moral power will be noticed. The proper remedy is then to facilitate the resorption, not stop it immediately by permitting the ejection of the sperma just about to be resorbed, and thus letting the organism return to its former lower state of vitality.

There is no question but that in normal cases a fair state of health can be preserved with occasional losses, or rather, ejections of the goné; for, the physiologist is not concerned with sociology, and the problem of the vital equilibrium is wholly independent from the fact whether the ejected sperma is wasted by a nocturnal

pollution during sleep, during a purposive waste during waking hours, or whether it be introduced into the ovaries of a woman not legally and socially married, or into those of a woman legally called a wife. The important point is that the sperma is ejected through the urethra, or the penis. To persons who are content with this fair average of health, and who consider it static, there is no reason why they should not be satisfied with it.

But for those persons who are seeking the highest state of vitality possible to them, and who realize that if all losses whatever, through whatever causes, be avoided, there is for them a possibility of an ever-increasing vitality, a dynamic, developing evolution, which will ultimately lead to the mastery of their higher faculties over their lower ones, of the mind over the body, and the spirit over the mind, then for them this indifferentist doctrine is not sufficient. They will insist on preserving every drop of their precious sperma, permitting it naturally to be resorbed, assuring them first of a perfect physical body, next of increased mental faculties, and finally, if they progress, and the highest nervous centres be nourished and developed, of the full development of the spirit.

The value of the sperma can be judged of by this, that the sub-cutaneous injection of only a cubic centimetre of testicular secretion has in many cases brought back comparatively lasting health to old men, as Goizet shows. The onanist and masturbator and the profligate are not so much criminals as fools, demented minds, who, for the sake of an ever-decreasing pleasure, are either wasting or using^d to the lowest possible uses the most concentrated form of their vitality,—and, in a very real sense, their very eternal destinies.

4. *Fourth Proof of Regeneration: Disease.*—The discovery of Brown-Séquard is remarkable in nothing more than in this, that it has been "the successful agent in curing diseases of the most varied kind, except where serious organic lesions existed.

Here follows a list of the "principal diseases which are efficaciously attacked by injections of the testicular secretion." Goizet adduces definite cases for almost all. Displacement of the uterus, abscess of the cerebellum, simple and punctata acne, heart failure, weakness of sight, hearing, and voice; alcoholism; mental alienation, persistent leanness, anæmia, anæsthesia of the skin, lack of appetite, cerebral apoplexy, asthma, hysterical globus, boulimia, Bright's disease, catarrhal bronchitis, catalepsy, cataract, bronchial catarrh, cephalalgia, chorea, loss of hair, congestion of the brain and spine, pulmonar congestion, constipation, convalescence of serious fevers, curbature, writer's cramp, Saint Vitus's dance, debility, decrepitude, defecation, fatty degeneration of the heart, delirium, diarrhœa, intercostal pains, earache, dysentery, and dyspepsia. Cachectic ecthyma, eczema, epilepsy, excess, bodily and mental fatigue, fever, boil on the anus, gangrene, glycosuria, gout, hallucinations, hematemesis, hemiplegia, hydropneumothorax, hypertrophy of the heart, hypochondria, hysteria, impotence, incapacity for mental labour, incontinence of urine and fecal matter, inco-ordination of movements, influença, insomnia, laryngitis, leprosy, malaria, headaches, menstruation, morphinomania, neurasthenia, erratic and sub-orbitary neuralgias, onanism, palpitations, paralysis, paraplegia, paresis, loss of appetite, memory, sleep, sperma; phthisis, photophobia, pleurisy, priapism, ptyriasis, muscular, nodal, and articular rheumatism, salpingo-ovarite, sciatica, senility, strabismus, stupour, nocturnal sweats, syncopes,

constitutional syphilis and consumption, tabes, cough, pulmonary tuberculosis, ulcers, vomitings, and vertigo.

Now the very number of diseases which the injection of testicular secretion has cured shows that this remedy is not a specific for any one disease. The fact is that these injections merely heighten the tides of life and assist nature to cast off these diseases. This does not seem very far-fetched when it is remembered that daily we take into our body by food, drink, or breath germs of the most serious diseases, which, however, are harmless so long as the constitution is strong enough to cast them off.

But why should man inject into himself the testicular secretion of animals when he could preserve his own, and keep his body continually at the highest possible state of vitality? In view of this it would not be too much to say that if a man were absolutely continent, he would be free from all diseases, and more or less so in proportion as he is not quite continent.

This thesis is proved by the reverse of the above process, mentioned above, where it was seen that all manner of diseases, corresponding generally in remarkable degree to the above list, followed spermatic ejection more or less according to its amount.

This is an appropriate place to discuss the question of the kind of secretion which is most available and useful. Goizet operated with the extracts from monkeys, dogs, rams, guinea-pigs, goat, horse, bull, hare and cat. The guinea-pig was the best in many respects: especially because easily procured. But, besides this, an experiment is recorded with human sperma, which was as successful, if not more, than the experiments with the animals' extracts. But if the human sperma is as good if not better, why should not each man preserve his

own, instead of wasting this and then procuring other by repulsive and brutal means?

Nor is this merely a matter of sentiment. Goizet found by the experiment that the extract from cats was most helpful against paraplegia; from rams, against dyspeptic disorders; of the rabbit, caused melancholy conditions; of the dog, gay feelings. Would it not seem natural that each animal secreted that which was best fitted for itself, and was natural to it? Would it not be wisest to avoid injecting into the blood unknown and perhaps dangerous animal bestial tendencies? And instead of painful injections, why not permit the natural painless process to proceed in the order which nature mapped out for man?

5. *First Objection: Nervous Shock.*—In the former pages all physical exhaustion consequent on losses has been supposed to depend on the waste of so much sperma. But it is objected that the real cause of exhaustion is the shock to the nervous system which is implied in the full or partial orgasm.

The words of Jozan may be of interest: "The work of destruction which, under the influence of onanism, takes place in the organism may be explained first, by the repetition of convulsive and voluptuous shocks which undermine the nervous system, and secondly by the incessant loss of the seminal liquid. . . . Onanism is no less disastrous with girls and yet immature boys, who have no seminal secretion to lose, as with boys who have passed the age of puberty. Yet the involuntary seminal losses are so much more exhausting and undermine so much more rapidly the organism, as they are more passive, and no voluptuous erection precedes them, and no nervous shock accompanies them. . . . Only, when one succeeds in overcoming the vice with

immature individuals of both sexes, it is almost certain that their health will be immediately re-established; nature energetically takes up again her rights, and everything takes up its proper course, except the irreparable losses of past nutrition. . . . while the other continue to perish and to bear the punishment of a fault which they had nevertheless put an end to. . . ." It would seem therefore that the nervous evil is limited to immature boys and girls; the serious harm to mature boys comes from the loss of the seminal fluid, especially inasmuch as the nervous element disappears almost completely with frequency of repetition. With unconscious losses, this nervous element can hardly be said to exist; and as the evil continues to grow with frightful rapidity while the nervous element grows less, the evil must evidently be due to something else.

This is particularly evident from a case given by Holmes, although he himself believes that "the drain upon the system is rather through the nervous system than through the testicle, and the exhaustion experienced after each occasion is consequent upon a loss of nervous force rather than upon a loss of secretion of the generative organs." The case is as follows: "I know an instance in which an apparently healthy man, ætatis 45, suffered so much depression with staggering and loss of vision after each connection with his wife that, being unable to restrain himself, he urgently demanded, and submitted to castration. He lived many years afterwards in the enjoyment of perfect health, and in conviction that the mutilation to which he had submitted had been the means of preserving his visual organs, if not of saving him from general paralysis. I may add that for a year or more the gentleman continued to have connection with his wife, and emissions much as before the

operation, so that his wife was not aware of any change till he informed her of what had been done. After about a year desire gradually ceased. The good effect here commenced although the excitement and emissions continued after the organs were removed."

In this case the nervous shocks continued for a whole year after the possibility of spermatic losses was ended, and yet health improved immediately and radically. It would not seem therefore that the nervous shocks entered for much in the pathological effects of the orgasm, except perhaps in the case of children, whose impressionability and delicate health might be ruined seriously for the future by them.

6. *Second Objection: Spermatozoa.*—Granting that the loss of the sperma is the proximate cause of the physical exhaustion, it has been lately inquired which of the elements of this is the important one? It has been usual to consider that the Spermatozoa were the essential elements, as Jozan implies continually.

This was the very marrow of the several proofs for regeneration advanced above, inasmuch as, for instance, it was in this element of the fluid that castrates differed from normal males.

But it would seem that Goizet, in his researches on his subcutaneous injections, had been led to believe otherwise. His statements are so contradictory and inexact that it will be necessary to consider them one by one.

"I have studied with the greatest care an exceedingly remarkable case which shows that the spermatic animalculæ may be missing, in spite of the existence of that part of the liquid secreted by the testicles which gives to man the various physical, moral, and intellectual qualities which are missing with eunuchs. In fact, the

spermatozoa were missing in the secretion of an officer, remarkable by his strength and his other moral and physical qualities, his sexual potency, and the amount of sperma produced. Professor Cornil in former times, and Mr. Hénocqué and myself latterly, have assured ourselves of this."

The words used above are ambiguous. They would be conclusive if they showed that this man became the father of children without having spermatozoa. The mere fact of not finding spermatozoa in very abundant sperma would only show that it was not mature, as happens often in many other cases. Besides, physiologists so eminent as Jozan, Lallemand, Holmes, and Foster all attribute the act of fecundation to the spermatozoa, and not to any other portion of the secretion.

"Besides, it was evident *a priori* that the spermatozoa do not participate in the dynamogenic action of my injections, since we know that they cannot be absorbed, and that it is the liquid part of the sperma which, becoming resorbed, is the vivifying agent with young or adult individuals who possess active testicles."

It suffices to say that in the former chapter we have had physiological proof to the possibility of the absorption of the spermatozoa, and that the other portions of the sperma have no fecundating effect, unless indirectly by action on the spermatozoa.

"Nevertheless, it is possible that these animalculæ be dissolved in the cellular tissue beneath the skin, and thus might contribute to the dynamogenic effects which the testicular secretion produces on the nervous centres. We cannot decide this question."

True as this be, it would seem to contradict the above statements, also that the spermatozoa are removed "by the filtering process. As a fact, the human sperma

mentioned contained them, and acted as well if not better than Goizet's preparation.

The fact that Goizet has lost sight of is this. His preparation is made up out of the whole testicles, containing all the parent-cells of the spermatozoa, thus containing all their essence without being dependent on them. For this reason his preparation acts as well as the human sperma which contains them. But this does not mean that the spermatozoa are not the vital part of his preparation. A slightly better acquaintance with physiology would have shown to Goizet that the rest of the sperma is wholly powerless to create or increase life. And Goizet realizes this: "I do not deny . . . that it may be the portion (liquid) of the sperma which is destined to transform itself into parent-cells of the spermatozoa which, after resorption, and having lost in the blood the power of making this formation, acts on the nervous centres as dyamogenic effect." But Goizet still confuses the liquid portion of the sperma with his preparation which he made by reducing the testicles themselves to a pulp, and thereby including the parent-cells of the spermatozoa, including these as if it were in essence.

It would still remain, therefore, that the vivifying element of the sperma was the spermatozoic element, or the spermatozogenetic cells, at least.

Jozan reports a remarkable case in which presence of the male spermatozoa outside the unbroken membrane hymen in the female nevertheless caused the ovaries to fructify. The spermatozoic element may here have been active, through the intermediation of the lymphatic system; but in so rare a case it is unsafe to construct universally applying rules.

1. *The Possibility of Regeneration.*—The above considerations suggested that in order to attain the highest

state of health it was advisable to store up and preserve all the genital secretion. But it is doubtful if this result ever occurs in a "natural" life. Spinsters and bachelors, innocent of any illicit intercourse, generally lose whatever goné is beyond the actual immediate needs of the body. It is then only in a "spiritual," earnest, determined life that a man may earn the power to preserve it.

But those who are not spiritual, discouraged by the continual failures of the natural life, ask, Is it possible to accomplish this end?

There is no reason why this should be impossible. For the generative function is *par excellence* of all vital functions of the body that one most directly under the control of the mind. A lascivious thought is sufficient to awaken the very depths of desire. It would seem then that by merely avoiding such conscious excitation of these instincts, the wasteful losses would be of themselves reduced to a minimum. But this negative method is the only proper one. It is hopeless to control the sexual function by direct antagonism, by fighting evil thoughts consciously. Whosoever touches pitch, even to clean himself of it, defiles his hand. The only recourse is then to ignore the subject as far as possible, and to fill the mind with all beautiful, true, and ennobling thoughts. The whole nature will gradually be altered, transfigured by the higher life.

There is some good authority for this theory. Richard says, "Women who live in absolute chastity, far from any erotic excitation, find that their menses finally become so very limited that they hardly make any spots on the cloths. On the contrary, women given up to enjoyment and prostitution find that the flow becomes very abundant, and lasts from ten to fifteen days. Half of their existence

is one long menstruation." This is not true only of women, but also of men.

In fact, this principle of gradual purification by mental avoidance of libidinous thoughts is so powerful as to determine the most remarkable circumstances. Jozan, for instance, reports a case in which a man was unable to ejaculate the secretion when attempting to have intercourse with his wife, although he had no such trouble with other women, among whom was his former wife, by whom he had children. The reason of this inability must have been a mental feeling or mood of consciousness determined by the character or nature of his wife. Gross adds: "That the reflex movements emanating from the lumbar genital centre are amenable to the will is illustrated by the fact that many men, to avoid impregnation, are able to retard an emission until the penis is withdrawn from the vagina; and the restraining action of the cerebrum is also proved by two curious cases of atonic aspermatism, recorded by Roubaud and Hicquet, in which the ejaculation instantly ceased if the patient awakened during a nocturnal pollution. Other men, through disgust, suspicion of infidelity or loss of passion, are unable to complete sexual congress with their wives, although they succeed perfectly with other women. Hence aspermatism from the inhibitory action of the brain over the centre for ejaculation is temporary or relative, emissions being possible with others; and it is altogether independent of organic lesions." These words show that it is possible for all men, if they so desire, to gain such a control over their nervous centres so as to repress ejection of the goné, and to preserve continence absolute. Of course those men who suffer from involuntary and unconscious losses during waking hours have the hardest battle to fight; but few are in

this condition who have not themselves to blame for it, and are very seriously sick. Most men can repress their passions and become perfectly continent if they so desire.

Of course, it is as well to count the cost before beginning the struggle. Pleasure and self-indulgence, physical luxury and abandonment to comfort must be given up. Is this price too heavy for perfect health? Yet, 'nothing less than this will purchase it, and Nature cannot be deceived or defrauded. Pleasure on the one hand, and Happiness on the other. Each man must choose for himself.

Unprejudiced observation of facts will show that some men suffer from losses of the goné voluntarily or involuntarily much more frequently than others. Some men may in fact be said to be absolutely continent when compared with others. It is therefore neither an impossibility nor something unreasonable to demand that the losses should by control of the will be reduced as much as is actually the case in other men. The greater continence, the better; greater continence is better than less continence, while absolute continence is still better than great continence. Absolute continence is not a state wholly dissimilar in nature from incontinence; it is only the one extreme of a process which has its complementary extreme in self-indulgence. Judicious development of will-power and physical endurance will infallibly have an effect on the state of health, and will gradually turn the tides of life in the desired direction. Perseverance will then alone be needed to fulfil ultimately the desired effect. Even if the man who is struggling is not successful in attaining the aim and perfection of the development, every increase of continence will increase his vitality just so much, and make him more able than he ever was to attain the very end of his desires.

It is impossible to insist too much upon the fact that absolute regeneration is not an imaginary ideal or an unrealizable ultimate. It is possible to all those whose will has acquired the necessary inhibition over the ganglionic nerve-centres. It is possible to all who are irrevocably determined to attain it. Disbelief of such a possibility is easy to him who does not give himself the trouble of verifying it by his own experience. But such belief is worth nothing. Only he who has scientifically experimented has any right to say anything in the matter; and his word alone carries with it any authority. That it is not impossible is patent when men can be pointed out who live among us who have attained this self-mastery. Experience is the highest test, and all enquirers in the matter are invited by truth to satisfy themselves as to the credibility of the matter.

What are the means which can be employed to attain such a happy result? They differ in each individual case. Physical or mechanical means of stopping the flow of semen are undesirable, because both useless and injurious. The mind must control the body wholly, not only in this function of life, but in all others. Stoic self-discipline will bring success in this as in all other struggles for self-mastery. Hygienic rules and common-sense application of them will be invaluable, and to every one who seeks the road with all his heart all necessary guidance will be granted by the Divine within.

8. *The Regeneration with woman.*—The goné in man corresponds in the woman to the leucorrhœa, not to the flow of blood and effete matter. The stopping of the latter would involve serious inflammations. It is, however, only the concomitant effect of the leucorrhœa,

•

which, if stopped gradually, will cause the other to dimirish constantly.

9. *Transmutation.*—So far, the above disquisitions have concerned themselves primarily with facts fairly well known. There is an important field of inquiry, however, which up to the present time has been wholly neglected. It is a debatable land, and whatever descriptions of it are given must be considered as only provisional.

In respect to the fate of the goné, if it be not lost externally, it has been supposed that a continual process of resorption took place, of which consciousness is only aware when it ceases, after some loss of goné. It is this continual resorption which yields the conesthesia of well-being and happiness which underlies the varying moods of the emotional nature.

Yet it is possible, at times, to point to its existence, not only negatively, but also positively. This implies that the goné within the *vesiculæ seminales* is constantly undergoing transmutation of some kind. As a rule, no attention has been paid to this by physiologists. It is, however, a fact of experience, which any man can assure himself of, that the physical goné undergoes physical changes, the nature of which is not understood, and the order of the succession of whose different phases is also very uncertain.

(1). The first stage of the goné seems to be the well-known viscous form, semi-transparent, and containing the spermatozoa in their normal shape.

(2). There is another phase of goné, which is distinctly whitish, like chalk. This seems to be due to minute spheres diluted in a whitish fluid.

(3). Again, apparently later on in the life of history of the goné during the process of its transmutation, the

goné appears like a crystalline fluid, perfectly transparent. This is not to be confused with the secretion of the prostate gland, which, although apparently crystalline, soon stains yellow, and it is not so much of the consistency of glue as the goné at the above stage. Here it is absolutely colourless.

(4). At other times the goné appears to be gathered together in lumps, as it were often of a colour a little darker than the goné in its first phase.

(5). Finally, these lumps appear at times to have become homogeneous round bodies, with minute artery-like processes ramified around the mass, which has the appearance of some sort of an ovum.

Of these physical changes any man can assure himself by cursory observation; what the structural and histological difference between these various phases is, is a subject for careful investigation. However, these physical changes prove that the goné does not remain inactive, but that some process of transmutation is proceeding constantly within the vesiculæ seminales and the end of the spermatic cord.

But this is not all. Allied with these changes are other interesting facts. Ejections of goné differ very much. At times they are erections, of which the sleeping subject is half conscious, and which are accompanied by intelligible dreams that precede the katabolic crisis, which may be arrested partially or wholly. This ekbole consists usually or often of goné in the first three phases. At other times the ekbole occurs without premonition to the sleeper, who wakes suddenly to find the crisis past, with little or no signs of a previous erection. This usually is the sign of loss of goné in the latter two phases.

These two main forms of the goné seem to be

incipient or matured germs, whose period coincides with the lunar month. A quotation from Julius Nelson, given above, treated of this. Experience shows, however, that when by voluntary or other processes the subject has prevented the ekbole of the germ, it transmutes into vital force, increasing the vitality of every function, physical and psychical.

Yet there is not only a monthly germ. There is a daily germ, which matures once every twenty-four hours. Between the hours of midnight and 8 a.m., the generative function seems to be exceedingly active. It is well known that the great majority of involuntary ekboles occur between the hours of midnight and 3 a.m. But this is not all. Usually about 5 to 7 a.m. it will be noticed that erections occur, even if no mental (conscious) or physical stimulation have occurred. If the subject remains awake during this period, he experiences a positive stream of transmuted vitality ascending (as the feelings would suggest) from the region of the generative organs upwards along the chest, across the throat longitudinally through the cavity of the mouth up to the brain. This lasts a shorter or longer time according to the strength of the transmuted goné, the physical condition of the organism, and other external circumstances. This, however, does not occur unless the subject has remained conscious since midnight, not only in half-conscious conditions, but in positive mood and frame of mind. Sleep, and especially sleep at the two periods of 12 p.m. to 3 a.m., and 5 a.m. to 7 a.m., seems to dull the process. The physical circumstances of the organism may, however, permit this feeling at other times of the day also.

It is remarkable that subjects of so vital an importance as the function of generation should have

been so little studied. Most men and* women are wholly ignorant of that which furnishes the crude vitality which is the basis of their lives. False modesty leads to ignorance, and ignorance leads to bad health, and lax standards of morals in respect to the most important function of the body. It will be the glory of the twentieth century that men will learn to direct their vitality as intelligently as they feed and train their muscles and their digestive and secretive function. Then will it be possible for men to economize their vitality, and by control of their lower selves by the higher self, to use what formerly ministered to their self-gratification for the higher purposes of attaining the highest possible state of physical and psychical health, that they may live wholly in accord with all natural law, which is but the revealed portion of the blessed Will of the Father in Heaven.

Works by Arthur Lovell.

Crown 8vo, cloth, 5s. net; by post, 5s. 3d.

IMAGINATION AND ITS WONDERS.

Crown 8vo, cloth, 3s. 6d. net; by post, 3s. 9d.

VOLO ;

OR, THE WILL—WHAT IT IS, HOW TO STRENGTHEN,
AND HOW TO USE IT.

Crown 8vo, cloth, 2s. net; by post, 2s. 3d.

ARS VIYENDI ;

OR, THE SECRET OF ACQUIRING MENTAL AND
BODILY VIGOUR.

Crown 8vo, cloth, 2s. net; by post, 2s. 3d.

CONCENTRATION.

Demy 8vo, cloth, 6s. net; by post, 6s. 4d.

ANIMAL MAGNETISM ;

OR, MESMERISM AND ITS PHENOMENA.

Fourth Edition. With Introduction by "M.A., Oxon."

By WILLIAM GREGORY, M.D., F.R.S.E.

Crown 8vo, cloth, 5s. net; by post, 5s. 4d.

HUMAN MAGNETISM ;

OR, HOW TO HYPNOTISE.

With Ten Plates. By PROF. JAMES COATES.

Crown 8vo, cloth, 5s. net.

CHRONICLES OF SPIRIT PHOTOGRAPHY

AND THE PHENOMENA INVISIBLE TO THE MATERIAL EYE.

Interblended with personal narrative.

Illustrated by six plates containing fifty-four miniature
reproductions from the original photographs.

By MISS GEORGINA HOUGHTON.

Crown 8vo, cloth, 5s. net; by post, 5s. 4d.

MIRACLES AND MODERN SPIRITUALISM.

Three Essays. New and Revised Edition, with Chapters on
Phantasms and Apparitions.

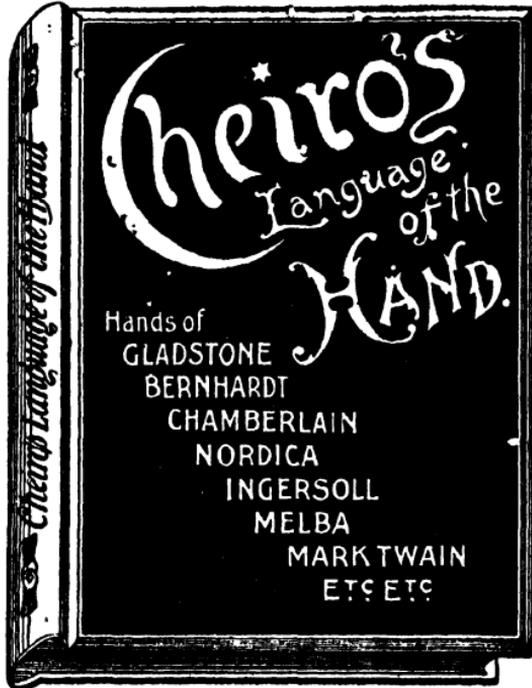
By ALFRED RUSSEL WALLACE, D.C.L., LL.D., F.R.S.

NICHOLS & Co., 23, Oxford Street, LONDON.

Publishing Office: 34, Hart Street, London, W.O.

Demy 4to, with Illustrations.

TEN SHILLINGS AND SIXPENCE.



TEN SHILLINGS AND SIXPENCE.

A Complete Practical Work on the Sciences of CHEIROGNOMY and CHEIROMANCY. Containing the System, Rules, and Experience of CHEIRO. Fifty-five Full-page Illustrations, and over Two Hundred Engravings of Lines, Mounts, and Marks. Containing Illustrations of the Wonderful Scientific Invention, the apparatus for

“Thought Photography and Register of Cerebral Force.”

PRESS OPINION.

“The Court Journal.”

“CHEIRO'S LANGUAGE OF THE HAND,' which contains *auto-graphed* impressions of the hands of some of the most famous men and women of the day, has had a sale in the States alone of over 30,000 copies.”

Crown 8vo, cloth, 3s. 6d. net; by post, 3s. 9d.

GUIDE TO THE HAND.

The best Work on Palmistry at a low price.
Fully illustrated and written with Cheiro's usual clear style.

NICHOLS & Co., 23, Oxford Street, LONDON.

Publishing Office: 34, Hart Street, London, W.O.

Crown 8vo, cloth, with illustrations, 3s.

CRYSTAL-GAZING AND CLAIRVOYANCE.

BY JOHN MELVILLE.

EMBRACING

PRACTICAL INSTRUCTIONS

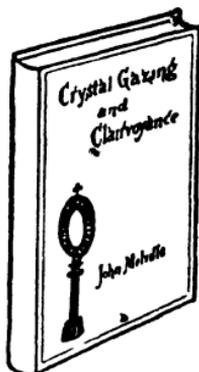
In the Art, History, and Philosophy
of this Ancient Science.

ROCK CRYSTALS,

FOR THE EXERCISE AND DEVELOPMENT OF
CLAIRVOYANT VISION,

Prices from 63/-

SOLID GLASS SPHERES, from 5/6.



“The Sunday Times.”

“This work contains an interesting chapter treating of the ancient practice of Crystal-Gazing historically. The directions for gazers are precise and clear, as are the interpretations of the appearances of various clouds on the crystal. The subject of hygienic clairvoyance is also dealt with. The accounts of the prescriptions recommended in trance are curious, and might be worth testing.”

“Light.”

“‘Crystal-Gazing and the Wonders of Clairvoyance,’ by John Melville, has most of the characteristics of sound knowledge and seriousness in a field that easily lends itself to fantasticalities. The little book professes to give practical instructions in the art, history, and philosophy of this ancient science, and includes an abridgment of Jacob Dixon’s ‘Hygienic Clairvoyance,’ with various extracts, original notes, glossary, bibliography, and index.”

Crown 8vo, cloth, 3s. 6d. net; by post, 3s. 10d.

“JOHN WILLIAM FLETCHER, CLAIRVOYANT.”

A BIOGRAPHICAL SKETCH, BY SUSAN E. GAY.

With Chapters on Early Life and Development of Mediumship, Spirit Identity, Relation of Spiritualism to Science and Religion, Trance Addresses, Message of Spiritualism, Christianity of Men, Spiritual Evolution, Spiritualism and Reform, &c. With portrait.

NICHOLS & Co., 23, Oxford Street, LONDON.

Publishing Office: 34, Hart Street, London, W.O.

CHARACTER DELINEATIONS from Photograph or Handwriting, P.O. 2/6.
Personal Consultations Daily with **Prof. HUBERT**, who is one of the best known Phrenologists in the Kingdom.
ONLY ADDRESS: 23, Oxford Street, London, W. Call when in Town. Fees from 2/6 only.

Royal crown 8vo, cloth, 12s. 6d.; by post, 13s.

ASTROLOGY.

An Easy and Comprehensive Treatise on the Influence of the Heavenly Bodies and the Methods of Casting Horoscopes.

Compiled and arranged from the Works of the Masters of the Middle Ages and Wm. Lilly, with the Corrections and Emendations of their Disciples, bringing the Science of Divination to date.

By **ELLEN H. BENNETT.**

Demy 8vo, cloth, 10s. net; by post, 10s. 6d.

NEW MANUAL OF ASTROLOGY.

A COMPLETE GUIDE FOR STUDENTS.

By "SEPHARIAL" (WALTER OLD).

Cloth, 3s. 6d. net.

PRACTICAL ASTROLOGY.

Being a Simple Method of Instruction in the Science of Astrology.
Second Edition, Revised.

By **ALLAN LEO.**

Crown 8vo, cloth, 2s. 6d. net; by post, 2s. 9d.

THE DEGREES OF THE ZODIAC SYMBOLISED,

WITH

THEORETICAL VALUE OF THE DEGREES.

By "CHARUBEL."

Cloth, 1s.; paper, 6d.

THE KEY TO PALMISTRY.

By **M. C. LANGRIDGE.**

NICHOLS & Co., 23, Oxford Street, LONDON.
Publishing Office: 34, Hart Street, London, W.C.

Demy 8vo, cloth, gilt edges, 25s. net; by post, 25s. 6d.

**THE MYSTIC TEST BOOK;
OR, THE MAGIC OF THE CARDS.**

By O. H. RICHMOND.

This work is the only one in print which gives the true use of and meanings under all conditions of the ancient mystic emblems known to moderns, under the name of Playing Cards. It shows that they are astrological and astronomical emblems invented by the ancients. The wonderful sacred triangle, crosses and other mystic emblems are fully illustrated, together with the marvellous tarot squares, or magic square of the ancients, and the laws governing same. All profusely illustrated. Every person in the land who appreciates the mystical in nature should own a copy of this book.

Crown 8vo, cloth, 2s. 6d.; by post, 2s. 9d.

THE SQUARE OF SEVENS;

A MANUAL OF CARTOMANCY.

Illustrated.

In case, 3s. 6d.

FORTUNE-TELLING CARDS.

A pack of Thirty-two Cards specially prepared for use by diviners.
With accompanying explanatory booklet.

Demy 4to, with illustrations, £1 10s. net.

**THE BOOK OF BLACK MAGIC AND OF
PACKS.**

Including the Rites and Mysteries of Goëtic Theurgy, Sorcery, and
Infernal Necromancy. With about 200 illustrations.

By A. E. WAITE.

Demy 8vo, cloth, 15s. net.

TRANSCENDENTAL MAGIC:

ITS DOCTRINE AND RITUAL.

Now for the first time translated into English. With all the
Original Illustrations, a Biographical Preface, copious
Index, and Portrait of the French Magus.

By ELIPHAS LEVI.

NICHOLS & Co., 23, Oxford Street, LONDON.

Publishing Office: 34, Hart Street, London, W.C.

Works by H. E. Butler.

Demy 8vo, cloth, 21s. net; by post, 21s. 6d.

SOLAR BIOLOGY.

With Illustrations. A New, Scientific, Exact, and Easy Method of Delineating Character, Diagnosing Disease, Determining Mental, Physical and Business Qualifications, Conjugal Adaptability, &c., from Date of Birth.

Crown 8vo, cloth, 6s. net; by post, 6s. 3d.

THE SEVEN CREATIVE PRINCIPLES.

This Book should be read by every student and thinker. It explains the Laws of Nature in a scientific and lucid manner. It makes clear the process of evolution and development, and holds the reader spell-bound with its simple truths. Illustrated with coloured plates and portrait of author.

Crown 8vo, cloth, 5s. net; by post, 5s. 3d.

THE NARROW WAY OF ATTAINMENT.

This work teaches not only the methods employed by the old Egyptian Masters to develop soul-consciousness, but makes plain the higher cult taught by Jesus the Christ. Every person who will follow the simple rules laid down in this work will develop mind and soul powers that will permit them to explore realms unknown to material man.

Crown 8vo, cloth, 5s. net.

REGENERATION.

By KENNETH SYLVAN GUTHRIE, A.M., Harvard, Ph.D., Tulane.

WAS WRITTEN FOR THE FOLLOWING PURPOSES:

I. To show that the Doctrine of *Regeneration*, or *Sexual Continence*, is only the application to Man of the universally recognised Laws of Biology, as set forth by the most recent authorities.

II. To show that *Regeneration* is, according to the facts taught by the most recognised medical writers, a physiological process normal in Man, and that entire *Continence* is possible and beneficent.

III. To explain scientifically the methods to gain entire control over the Creative Function.

IV. To show that the New Testament enforces it so clearly that language could not be more emphatic.

Every chapter in it is full of valuable interest. It is the only work that I know, published on the subject, giving so much precious information in a single volume. EVERY PERSON interested in the regeneration of humanity should read this book.

NICHOLS & Co., 23, Oxford Street, LONDON.

Publishing Office: 34, Hart Street, London, W.C.

Crown 8vo, cloth, 5s. net; by post, 5s. 3d.

THE FORBIDDEN FRUIT;

OR, REVELATIONS OF EGYPTIAN MYSTERIES.

By ROBERT HOWARD.

Demy 8vo, cloth, 3s. 6d. net; by post, 3s. 9d.

"THE GERMAN NATURE CURE, AND HOW TO PRACTISE IT."

By I. AIDALL.

Crown 8vo, cloth, 2s. 6d.; by post, 2s. 9d.

THE NEW HYGIENE.

A Drugless Remedy for the Treatment of all Diseases as practised by DR. PRIESSNITZ (*of Germany*); DR. A. WILFORD HALL, DR. W. E. FORREST, DR. H. T. TURNER, DR. R. T. TRALL (*of America*), and many other eminent Physicians in the United States and Europe. With a chapter on

DIET, PHYSICAL CULTURE, MASSAGE, Etc.

By JAS. W. WILSON.

Crown 8vo, cloth, 2s. 6d.; by post, 2s. 9d.

A NATURAL METHOD OF

PHYSICAL TRAINING.

MAKING MUSCLE AND REDUCING FLESH WITHOUT
DIETING OR APPARATUS.

By EDWIN CHECKLEY.

Limp cloth 1s. net; by post, 1s. 1d.

PRIVATE INSTRUCTIONS IN THE ART OF MASSAGE.

By DR. J. D. BALKAN.

NICHOLS & Co., 23, Oxford Street, LONDON.

Publishing Office: 34, Hart Street, London, W.C.

Works by J. L. Nichols, M.D.

Crown 8vo, 496 pp., 70 engravings, cloth, 6s. 6d. 12th Edition.

HUMAN PHYSIOLOGY.

In Six Parts. The Actual Condition of Humanity—Matter, Force, and Life—The Human Body—The Laws of Nature—Health, Disease, and Cure—Morals of Society.

Crown 8vo, cloth, 5s.

ESOTERIC ANTHROPOLOGY.

A COMPLETE MANUAL OF HEALTH FOR EVERY MAN AND WOMAN. 250,000 Copies of this Work having now been issued to the general public is, we consider, the best testimony of its value as a Hygienic Guide.

Crown 8vo, 230 pp., elegant cloth gilt, 3s. 3rd Edition.

SOCIAL LIFE:

A MANUAL OF MANNERS AND MORALS.

1s.; cloth, 1s. 6d.

A WOMAN'S WORK IN WATER CURE.

20th Edition. 1s.; cloth, 1s. 6d.

THE DIET CURE: EATING TO LIVE.

149 pp. fcap. 8vo, 6d.; cloth, 1s.

HOW TO COOK.

The Principles and Practice of Scientific, Economic, Hygienic, and Æsthetic Gastronomy, with Model Recipes in Every Department of Cookery, original and selected.

6d.; cloth, 1s.

THE BEACON LIGHT:

PHYSIOLOGY FOR THE YOUNG; A REVELATION OF THE HIDDEN DANGERS IN THE PATH OF LIFE.

NICHOLS & Co., 23, Oxford Street, LONDON.
Publishing Office: 34, Hart Street, London, W.C.