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PREFACE

THIS volume, which is neither a treatise on embryology, nor an essay in anatomy or physiological psychology, is intended as a study of the child in the light of the literature of evolution, an attempt to record and, if possible, interpret some of the most interesting and important phenomena of human beginnings in the individual and in the race.

In his examination and consideration of the numerous authorities consulted and theories investigated, the author has constantly endeavoured to be fair-minded and just, and has often preferred to retain the *ipsissima verba* of those who have said certain things well rather than to weaken or condense the argument.

Wherever it has been possible, exactitude in reference has been practised, and the Bibliography will, it is hoped, serve as a guide to the evolutionary literature of the child in

respect of matters discussed in these pages. To his colleagues in the University, especially to President G. Stanley Hall and Dr W. H. Burnham, the author expresses his gratitude for many kindnesses in the way of advice and suggestion, the loan of books and articles, and such other courtesies as smooth the path of the scientist. His thanks are also due to Mr Havelock Ellis, the Editor of the *Contemporary Science Series*, for many valuable suggestions, and to Mr Louis N. Wilson, the Librarian of the University, for the liberality with which he has placed at his disposal books otherwise unobtainable.

To the authorities of the Bureau of American Ethnology, the U.S. National Museum in Washington, D.C., and the Provincial Archæological Museum of Ontario, the author returns his thanks for the readiness with which they have granted permission to reproduce certain illustrations from their reports.

A. F. C.

January 1900.

TABLE OF CONTENTS

CHAP.		PAGE
I.	The Meaning of the Helplessness of Infancy,	1
II.	The Meaning of Youth and Play,	10
III.	The Resemblances of the Young,	29
IV.	The Periods of Childhood,	51
V.	The Language of Childhood,	107
VI.	The Arts of Childhood,	173
VII.	The Child as Revealer of the Past,	213
VIII.	The Child and the Savage,	287
IX.	The Child and the Criminal,	355
X.	The Child and Woman,	397
XI.	Summary and Conclusion,	441
Bibliography,		465
Index,		497

LIST OF ILLUSTRATIONS

CHILDHOOD, ... *Frontispiece*

PAGE

ESKIMO CHILD (from *Rep. U.S. Bur. of Educ.*, 1894), . . 28

PERIODS IN THE DEVELOPMENT OF A LAUGH (from Photograph in possession of Dr G. Stanley Hall), ... 50

'GREEN OLD AGE' AMONG THE AINU OF JAPAN (from *Rep. U.S. Nat. Mus.*, 1890), ... 104

INFANTILE CRY, THE ORIGIN OF SPEECH (from Wilson, 687, p. 516), ... 106

PRIMITIVE REPRESENTATIONS OF SPEECH—ANCIENT MEXICAN AND MODERN OJIBWA (from *Rep. Bur. Ethnol.*), 1889-90, 106

DRAWING OF HEN BY SIX-YEAR-OLD CHILD, . . . 172

DRAWING OF GROUSE BY KOOTENAY INDIAN, . . . 172

DRAWING OF MAN BY SIX-YEAR-OLD CHILD, . . . 190

DRAWING OF WOMAN BY SIX-YEAR-OLD CHILD, . . 191

DRAWING OF SUNSET BY KOOTENAY INDIAN, . . . 194

DRAWING OF COYOTE OR PRAIRIE WOLF BY KOOTENAY INDIAN 195

DRAWING BY SIX-YEAR-OLD GIRL, ... 206

THE BORDERLAND OF ATAVISM. A 'soft tail' on a Chinese Boy 8 years old (drawn by R. A. Cushman from Figure in *Bull. Soc. d'Anthr. de Paris*, 1872, p. 540), . . 212

PAGE

A Young Barbarian. A Pueblo Indian Girl, aged about 15 (from *Rep. U.S. Nat. Mus.*, Vol. VIII.), . . . 286

The 'Bear Mother.' Slate Carving of Haida Indians, representing the agony of the mother in suckling her child, half-human, half-animal (from *Rep. U.S. Nat. Mus.*, 1888), 354

Ainu Girl (from *Rep. U.S. Nat. Mus.*, 1890), . . . 396

The Late Chief 'Vanishing Smoke,' of the Mohawks of the Grand River, Ontario, Canada (from *Rep. Prov. Archæol. Mus., Ontario*, 1898), ... 416

Alaskan Eskimo Girl (from *Rep. U.S. Comm. of Educ.*, 1894), 434

THE CHILD

CHAPTER I

THE MEANING OF THE HELPLESSNESS OF INFANCY

Man at Birth.—How far man is from perfection when he begins life has been described by the old Latin philosopher, Lucretius, who wrote so many strangely modern things about the childhood of the race and the childhood of the individual: 'A child at its birth, like a mariner cast ashore by the angry waves, lies prostrate on the earth, naked, speechless, destitute of all the aids to existence, from the moment when it reaches the shores of light, torn from its mother's bosom by the efforts of nature; and it fills the place it has entered with dismal wailings.' [1]

Major J. W. Powell, in his sketch of man's progress, *From Barbarism to Civilisation* (505, p. 97), puts the same thought into somewhat different words: 'Every child is born destitute of things possessed in manhood, which distinguish him from the lower animals. Of all industries he is artless; of all institutions he is lawless; of all languages he is speechless; of all philosophies he is opinionless; of all reasoning he is thoughtless; but arts, institutions, languages, opinions and mentations he acquires as the years go by from childhood to manhood. In all these respects the new-born babe is hardly the peer of the new-born beast; but, as the years pass, ever and ever he exhibits his superiority in all of the great classes of activities, until the distance by which he is separated from the brute is so great that his realm of existence is in another kingdom of nature.'

The meaning of the helplessness of the human babe has only become apparent within our own century; it has taken the philosophers long to appreciate the full significance of the prolongation of human infancy. With the ancient writers, as with many primitive peoples, the weakness and hapless condition of

[1] *De Rerum Naturâ*, Bk. V.

the very young child so impressed themselves upon them that their real meaning was undiscovered. Indeed, the play of the active boy and girl was earlier and more correctly interpreted than the enforced inactivity of the infant. Mythology, and, later, false theology, complicated the subject, and when science grew to be strong it almost forgot the little child in the multitude of its other interesting and absorbing subjects of research.

Prolongation of Human Infancy.—Nevertheless, as Professor Butler has recently pointed out, the doctrine of the prolongation of human infancy, which Professor John Fiske has so ably shown to be part of the theory of evolution, was anticipated by Anaximander of Miletus, who flourished about 565 B.C. Professor Butler's discovery, however, was itself anticipated by Burnet in his *Early Greek Philosophy* (95, p. 74) by a couple of years. Burnet, after quoting the Theophrastean account of the speculations of Anaximander concerning the origin of man,—'Further, he says that in the beginning man was born from animals of a different species' [was like a fish in the beginning]. 'His reason is, that, while other animals quickly find food for themselves, man alone requires a prolonged period of suckling. Hence, had he been originally such as he is now, he could never have survived,'—observes 'the reference to the long period of nursing required by the offspring of the human race really contains a very acute piece of scientific reasoning.'

But the credit of the scientific interpretation of the prolongation of human infancy is still due to Professor John Fiske, who, in his *Outlines of Cosmic Philosophy*, which was published in 1874, was the first to indicate its true significance in the evolution of humanity. Darwin, with overwhelming evidence, had shown how man's physical organism had evolved from the creatures beneath him, the anthropoid apes being his nearest congeners; Wallace had shown how the next fact to exhibit the operation of natural selection in the development of man was his intelligence, whose variations now began to be of more importance and utility than mere variations of bodily structure. Instead of brute force, mental acuteness enabled man to survive, and his intelligence spent itself in the invention of devices (clothing, implements and weapons, food preparation, etc.), which became his salvation to a greater extent than had been hairy covering, strong limb, or fleetness of foot; he was learning how to live by his wits. Naturally enough, as his intelligence continued to augment, the skilful hand and the new-born

mind interacting, the size and complexity of the brain of man increased also, and the more perfect organisation of the thinking part in adult age had, as a necessity, to be preceded by a very much less definite organisation at birth. Hence, argued Mr Fiske, the phenomenon of human infancy, so strikingly different from that of the rest of the animal world.

Infant Man and Infant Animals.—A comparatively witless infancy must augur the high intellectual achievements of the men and women of the race. What a vast change from the amœba, at the beginning of the animal scale, to the human infant at the top. There parent and offspring are practically one, with no immaturity and no need of education. And between the two lie all varieties of animal kind, with ever-increasing complexity of structure and intelligence in the adult, and ever-lengthening infancy and childhood in the offspring. To use the apt words of Principal Russell (291, p. xix.): 'It is written that he is "born like the wild ass's colt"; but this overstates the fact in his favour, for the wild ass's colt is greatly his superior at birth. The human infant is, in truth, much more on a par with the lowly marsupials, the kangaroo and opossum, and requires for a longer period even than they the maternal contact, the warmth and shelter of the mother's arms. And not only does man thus begin life at the very bottom of the ladder, but he "crawls to maturity" at a slower pace by far than any of the animal species. Long before he reaches manhood most of the brute contemporaries and playmates of his infant years will have had their day, and declined into decrepitude or died of old age.'

How man has lingered in being born may be seen from a glance at the following table, which contains the incubation periods or gestation periods for man and other animals:—

Animal	Period.	Animal.	Period	Animal.	Period.
Coluber	12 days	Guinea-pig	7 weeks	Sheep	21 weeks
Hen	21 ,,	Cat	8 ,,	Goat	22 ,,
Duck	21 ,,	Marten	8 ,,	Bear	39 ,,
Goose	29 ,,	Dog	9 ,,	Small Apes	39 ,,
Stork	42 ,,	Fox	9 ,,	Deer	36-40 w'ks.
Cassowary	65 ,,	Foumart	9 ,,	Woman	40 ,,
Mouse	24 ,,	Badger	10 ,,	Horse	11 months
Rabbit	32 ,,	Wolf	10 ,,	Camel	11 ,,
Hare	32 ,,	Lion	14 ,,	Rhinoceros	18 ,,
Rat	5 weeks	Pig	17 ,,	Elephant	24 ,,

It will be noticed that the small apes and some deer approach man very closely in the period of gestation, while the horse, camel, and especially the elephant and the rhinoceros, exceed man considerably. The prolongation of gestation must stand in some relation to the particular species of animal in question, and be connected with its evolution. Man's social environment is trusted to protect the helpless infancy into which he is born, not his physical strength or his lower instincts as in the case of many animals.

Much interesting information concerning the physical and psychical development of young animals is contained in Professor Wesley Mills's study of the *Nature and Development of Animal Intelligence*, where some of the relativities and some of the genialities of animal life are well discussed. Of the dog we are told 'as soon as a puppy is born it is capable of cries, crawling and sucking, and, if we except those concerned with the vital or vegetative function, these about cover all its possible movements. Up to the period when the eyes open there are no new movements,' and, again, 'indeed, after the fiftieth day, these resemblances' [to the mature dog] 'are so numerous, or, in other words, the puppy is so matured, so fully equipped physically, that much less interest, or, at all events, importance, attaches to the study of his physical life' (427, p. 268, p. 164). The cat develops more rapidly than the dog, and has more of the wild animal about it, 'the nature of the dog being much nearer to that of man than is the cat's'; the dog also is 'essentially a social and a gregarious animal, the cat an independent and solitary creature, traits which are early shown.' The dog also is 'docile in the highest degree; the cat to a slight degree as compared with her intelligence' (427, p. 232). The dog, evidently, approximates to the child in his slower development, his sociality and his docility; and these are the factors which have given man his superiority.

Effect of Prolongation of Infancy.—The effect of the prolongation of infancy in the individual was to ensure the sociality of the race. In Mr Fiske's words: 'The prolonged helplessness of the offspring must keep the parents together for longer and longer periods in successive epochs; and when at last the association is so long kept up that the older children are growing mature, while the younger ones still need protection, the family relations begin to become permanent. The parents have lived so long in company that to seek new companionships involves

some disturbance of ingrained habits; and, meanwhile, the older sons are more likely to continue their original association than to establish associations with strangers since they have common objects to achieve, and common enmities, bequeathed and acquired, with neighbouring families. As the parent dies, the headship of the family thus established devolves upon the oldest, or bravest, or most sagacious male remaining. Thus the little group gradually becomes a clan, the members of which are united by ties considerably stronger than those which ally them to members of adjacent clans, with whom they may indeed combine to resist the aggressions of yet further outlying clans or of formidable beasts, but towards whom their feelings are usually those of hostile rivalry.' Thus, out of the helplessness of the child has arisen the helpfulness of men; from a gregarious, man has become a social being.

Mr Alexander Sutherland, enlarging upon Darwin, has lately sought to show, in his elaborate discussion of *The Origin and Growth of the Moral Instinct*, how all morality proceeds directly or indirectly from parental sympathy, which has arisen by slow degrees out of pre-human parental care, which is closely correlated with the duration of growth in the offspring, which last is bound up with progression in the complexity of the organism. Out of parental, conjugal and social sympathy thus initiated has developed the whole complex of our morality. The share of the child and of woman in the development of 'milder manners, purer laws' was recognised by Lucretius, who thus writes of the results of human marriage and love after the discovery of fire and house-building.[1]

The influence of the child is recognised in many of the myths and legends of primitive peoples, as the present writer and Mr W. W. Newell (*Journ. Amer. Folk-Lore*, IX. p. 237) have pointed out. As Mr Newell well says, in such of our familiar nursery tales as are genuine, 'the nursery feature is an accident,' and they 'appealed originally to the interest of the entire community.' In the Hero-Child myth, so common among the American aborigines, we see the folk-recognition of 'heaven-born mastership,' 'innate capacity,' 'divine birth,' in a word, an acknowledgment of the genius of childhood. These myths and legends are the psychical accompaniment of the physical fact of the prolongation of human infancy and of its sociological *rôle* among men.

[1] *De Rerum Naturâ*, Bk. V.

Rousseau, as Groos notes (253, p. 151), had not a little appreciation of the real significance of childhood and youth, for in his *Émile* (Bk. I.) he observes that 'if man came into the world grown up, he would be a perfect imbecile, an automaton, an immovable and almost insensible statue,' and, again, 'we pity the state of infancy; we do not perceive that the human race would have perished if man had not begun by being a child.' It has survived through his knowing by child-education how to become a man. Out of the development of his own faculties, which has arisen through his weakness, has come at last his strength, the limit of his genius, the depth of his wisdom.

The lengthening of the period of intra-uterine life and the prolongation of human infancy, the period of plasticity and educability, have been in reality the making of man. Professor Butler does not exaggerate when he says (100, p. 10): 'The factor in history that has changed the human being from a gregarious animal to a man living in a monogamous family, is, if anthropology and psychology teach us anything, unquestionably the child.' In a sense man has not lived for the child, but the child has lived for man. By reason of his childhood man is enabled to advance beyond the condition of his fathers. The existence of human childhood has made possible human civilisation.

The period during which the human child is suckled by its mother varies considerably among the races of men. According to Ploss (498, II. p. 379), a German woman 'rarely suckles her child a full year, although in the country and among the proletariat of the towns suckling may last two years sometimes, or even more,' the natural deterioration and decrease of the milk acting as a determining factor, together with the presence and substitution of other foods. With some primitive and some civilised peoples the period of suckling is much longer.

The data upon the subject are, however, still far from being altogether satisfactory, and there are evidently great individual differences in the same tribe, or even community. It would seem that the majority of peoples on the globe suckle their children during one to four years, and the largest number of these from two to three years. Among the causes which have led, in various parts of the world, to longer periods of suckling Ploss enumerates motherly tenderness and weakness towards the child, the pleasurable feeling excited in the mother by the

sucking of her child, and also the widespread belief that so long as she suckles her child a woman may remain without fear of becoming pregnant, an idea known in civilised Germany and in some islands of the South Pacific, but utterly unknown in many other parts of the globe. The length of the suckling period does not appear to stand in any direct relation with intelligence among primitive peoples. Bessels tells of a young Eskimo of King William's Land, who, although fourteen or fifteen years of age, after returning from the hunt, ran up to take suck of his mother, and Organisjanz saw among the Armenians of the Kuban district in the Caucasus a boy of six or seven years, who, although not yet weaned, went to school. The prolongation of the suckling period among primitive races would seem, therefore, to be often accidental or incidental (498, II. p. 381).

The Prolongation of the Growing Period in Man.—The whole period of growth in man, adolescence (if we interpret the term literally), seems to form a considerably larger portion of his life than the corresponding epoch in the existence of other mammals. The fact that 'the ratio of length of adolescence to length of life in the shortest-lived mammals is proportionately very much less than it is in longer-lived mammals,' is noted by Dr W. Ainslie Hollis[1] and Mr E. D. Bell. Dr Hollis fixes the completed growth of man 'by the union of the sternal epiphysis of the clavicle to its shaft at 25,' although there are 'great individual differences in the osseous union of the epiphyses,' and 'all the epiphyses were observed by Otto to be separate in the skeleton of a man aged 27 years, who, had he lived, might truthfully have posed as a youth when he was on the verge of 40.' It is apparent, therefore, that 25 years as the time for the 'completed growth' of man, and 75 years for his 'length of life,' are only approximate figures, since the former is perhaps too low, and the latter leaves out of consideration 'exceptionally long lives.' Mr Bell, who accepts the time of union of the epiphyses with the skeleton as the 'best measure of the period of maturity,' considers that the period of maturity is 'about from one and a half times to twice the period of puberty: one and two-thirds and twice seem common proportions. Man, for example, arrives at puberty at about 15, and is mature at 25; the lion and tiger arrive at puberty at 3 years, and are mature at 6.'

[1] *Nature*, LIX. p. 224, p. 487.

The following table, compiled from those of Dr Hollis and Mr Bell, shows the progressing lengthening of adolescence with mammalian longevity :—

COMPARATIVE ADOLESCENCE AND LONGEVITY.

Animal.	Authority.	Length of Adolescence.	Length of Life.
Dormouse	Hollis	3 months	4-5 years
Guinea-pig	Flourens ; Hollis	7 ,,	6-7 ,,
Lop Rabbit (Buck) .	R. O. Edwards	9 ,,	8 ,,
,, (Doe) .	,,	8 ,,	8 ,,
Cat	Mivart	1 year	12 ,,
,, ...	Jennings	2 years	15 ,,
Goat	Pegler	1 y'ar and 3 m'nths	12 ,,
Fox	Mivart	1 ,, and 6 ,,	13-14 ,,
English Cattle . .	Hollis	2 years	18 ,,
Large Dogs . . .	Dalziel	2 ,,	15-20 ,,
English thoroughbred Horses	Hollis	4 y'ars and 6 m'nths	30 ,,
Hog	Long ; Hollis	5 years	30 ,,
Hippopotamus . .	Chambers's Encyclopædia	5 ,,	30 ,,
Lion	Mivart	6 ,,	30-40 ,,
English Horse (Hunter)	Blaine ; Hollis	6 y'ars and 3 m'nths	35 ,,
Arab Horse . . .	Hollis	8 years	40 ,,
Camel	Flourens	8 ,,	40 ,,
Man	Buffon	25 ,,	90-100 ,,
Man (Englishman) .	Hollis	25 ,,	75 ,,
Elephant	Darwin	30 ,,	100 ,,
Elephant	Holder, etc.	35 ,,	120 ,,

Human adolescence would appear to be from one-third to one-fourth of life according to Hollis and Buffon. The centenarian's term of life makes it but one-fourth, as compared with the one-fifth of the Arab horse, the two-fifteenths of the thoroughbred horse, the one-ninth of English cattle, the one-eighth of the lop rabbit, the one-twelfth of the guinea-pig, and the one-sixteenth of the mouse. If the expectation of life at 25 years of age be considered, some 40 years remain to man after such maturity, adolescence and length of life being in the proportion of $1.2\frac{3}{5}$. In many respects this lengthening of the period of growth or adolescence in man is one of the most remarkable phenomena of his existence—intra-uterine

life, infancy, childhood, youth, seem all to have increased in duration, for the shaping of the human being, and the complicated environment accompanying modern civilisation tends to lengthen more and more the period of immaturity. In a sense, then, the child is really the 'father of the man,' for the modern man is becoming more and more of a child, or rather the modern child is losing less of childhood in the process of becoming a man. Emphasis has been laid upon this prolongation of adolescence by Dr G. Stanley Hall as one of the most notable features of modern human society. Professor N. M. Butler (100, p. 10) points out that 'while the physiological period of adolescence is only 14 or 15 years, the educational period is nearly twice as long; indeed the period in which social heredity finds him still plastic has come to be about 30 years.' In fixing the age for Congressman at 25, and for Senator at 30, the framers of the Constitution of the United States unconsciously safeguarded popular education for the future at least. The ages to come must interpret the saying of Schleiermacher: 'Being a child must not hinder becoming a man; becoming a man must not hinder being a child.'

CHAPTER II

THE MEANING OF YOUTH AND PLAY

Play Theory of Schiller.—Schiller, in his *Letters on the Æsthetic Education of Mankind*, published in 1794, made the following statement (252, p. 2): 'Nature has indeed granted even to the creature devoid of reason more than the mere necessities of existence, and into the darkness of animal life has allowed a gleam of freedom to penetrate here and there. When hunger no longer torments the lion, and no beast of prey appears for him to fight, then his unemployed powers find another outlet. He fills the wilderness with his wild roars, and his exuberant strength spends itself in aimless activity. In the mere joy of existence insects swarm in the sunshine, and it is certainly not always the cry of want that we hear in the melodious rhythm of bird songs. There is evidently freedom in these manifestations, but not freedom from all necessity, only from a definite external necessity. The animal works when some want is the motive for his activity, and plays when a superabundance of energy forms this motive—when overflowing life urges him to action.' This anticipates, if, indeed, it is not the source of, the theory of Herbert Spencer, that superfluous energy is the cause of play (252, p. 4). Spencer, in his *Principles of Psychology*,[1] informs us he had 'met with a quotation from a German author to the effect that the æsthetic sentiments originate from the play-impulse'—a view which the great English philosopher made very popular. Commenting upon the fact that Schiller was the author in question, Dr Groos remarks (252, p. 3): 'The doctrine of the origination of the æsthetic feelings from play-impulses is the cardinal point of Schiller's theory of the beautiful as it is revealed to us in these letters on æsthetic education.' Wallaschek (674, p. 232)

[1] Vol. II. p. 621.

reminds us that, in Germany, the play-impulse (*Spieltrieb*) theory is looked upon as an English idea, while English writers trace it to Germany, and to Schiller in particular, the truth being, however, that the German poet and philosopher was himself indebted in his æsthetic thinking to Pope, Addison and Henry Home (Lord Kames)—the fifth chapter of Home's *Elements of Criticism* containing 'approximations to the *Spieltrieb* theory.' It is no more than natural that a play-theory should ultimately hail from England, since the people of that country have preserved so much of the *naïveté*, spontaneity and exuberance of the activity in question. One of Home's observations (305*a*, p. 189), 'Play is necessary for man in order to refresh himself after labour; and, accordingly, man loves play, even so much as to relish a play of words,' must be read in relation to another statement made by him (305, IV. p. 3), 'Infants of the human species, little superior to brutes, are, like brutes, governed by instinct; they lay hold of the nipple without knowing that sucking will satisfy their hunger; and they weep, when pained, without any view of relief.' Human thought, in its infancy, is, like human movements, instinctive.

Gutsmuths.—Many of the ideas in Home are better expressed, though independently arrived at, in the remarkable volume on *Play*, published by Gutsmuths, 'the father of play in Germany,' towards the end of the eighteenth century. Gutsmuths recognised the universality of play among all ages and all peoples, the infinite number of games and the skill exhibited by the race in their invention and manipulation, the health-giving quality of play and its ultimate origin (though fatigue and ennui served it for occasion) in the natural impulse of activity. According to Gutsmuths (259, p. 2): 'In play strictly so understood, the player has no other object than the satisfaction of the free operation of his activity.' Here he draws some of his inspiration from Schiller, for he refers to *Die Horen*, a periodical to which the latter contributed. He also cites from Wieland, without giving exact reference, the following passage (259, p. 5): 'Play is the first and only occupation (*Beschäftigung*) of our childhood, and remains the pleasantest our whole life long. To toil like a beast of burden is the sad lot of the lowest, the most unfortunate and the most numerous class of mortals, but this is contrary to the intent and wish of Nature. The finest arts of the Muses are plays, and (as Pindar

sings) without the modest Graces even the gods begin neither festival nor dance. Take away from life what is the enforced service of iron necessity, and what is all that is left but play? Artists play with Nature, poets with their imagination, philosophers with their ideas, the fair sex with our hearts, and kings, alas! with our heads!'

The *rôle* of ennui in the stimulation of play, according to his theory, is well illustrated by Gutsmuths's observation that when ennui entered the hut of primitive man, pleasure took him by the hand and, the dance begun, movement-play solaced the first men; but when huts had changed to palaces and ennui again appeared, movement being forbidden, pleasure muzzled her mouth and cards were resorted to. The general necessity for play is evidenced by the widespread character of plays all over the globe, and plays more than anything else reveal national and racial character, the touch of the people is upon them, and 'by their plays shalt thou know them'—the childish negro, the Frenchman always paying court, the superstitious Spaniard, the warlike American Indian all reveal themselves in their plays. Gutsmuths cites Wieland again on this point (259, p. 13): 'And where is man less upon his guard than when he plays? Wherein is the character of a nation more genuinely reflected than in its ruling amusements? What Plato says of the music of any people holds also of its plays: 'There is no alteration in them that is not the herald or the result of a change in its moral or political condition.' Play is a revealer of character, and is never seen to better advantage than in childhood, when, as Home says (305*a*, p. 215), there is little or no disguise, 'for a child, in all things obedient to the impulse of nature, hides none of its emotions; the savage and the clown [*i.e.*, rustic] who have no guide but pure nature, expose their hearts to view by giving way to all the natural signs.' In the playing child we 'recognise the anxious care of nature to discover men to each other.'

Gutsmuths came very near the heart of the question when he said (259, p. 22): 'Work, serious occupations, and converse with adults are artificial *rôles* of youth, in which they gradually make their *début* on the grand stage of life; plays, however, are natural *rôles* in their own youthful Paradise.' Nowhere else are the young so little limited in their actions and conduct by adults—nowhere are they freer, more natural, more

human than here. In play all the vices and virtues reveal themselves, and 'the youth is smoothed down like the pebble in the brook—a thing which happens always the sooner the better, provided only the stream is not too tainted and muddy.' Moreover, play gives a picture of human life in the small, and is of great educational value, for through it alone can youth in many respects be moulded to the later and manifold activities of life. Gutsmuths recognises the fact that dislike for work does not originate in play, but finds its cause in mistakes of education, and denounces the custom of trying to get work out of children by promising them play afterwards. For him plays are exercises of body and of mind, and in his comments upon the various sorts and species of plays he anticipates much that is to be found in the writings of Johnson, Gulick and others who have discussed 'education by plays and games,' especially the *rôle* of the particular plays in the exercise and development of the several senses.

Froebel.—Coming after Gutsmuths, Froebel, the genius to whom we owe the 'kindergarten,' vitalised the stray atoms of the play-philosophy of Plato, Aristotle, Quintilian, Rabelais, Fénélon, Locke, Richter, and others who had sought, if not a royal, at least a pleasant, road to learning, and created a system of play-education for young children. Froebel himself believed that 'Play is the purest, most spiritual activity of man at this stage, and at the same time typical of human life as a whole of inner hidden natural life in men and all things. It holds the sources of all that is good. The plays of children are the germinal leaves of all later life' (225, p. 30). Play and speech (which, after all, is a sort of play), he thought, made up the life of the child, playing children make good pupils, play was the school of sociality, of art, of religion. For a mystic, such as Froebel was, all things were possible, but the practical interferences of his later disciples with the *naïveté* and the spontaneity of the child-nature have marred altogether the best ideas the master had. The wooden and modelled activity of so many kindergartens to-day is far from the ideal of him who said 'the unconsciousness of the child is rest in God,' for we may be sure he would have been the first himself to declare 'the play of the child is activity in God.' Being a German, Froebel failed to prevent the workaday world of his own time from casting its shadow over the light of his inspiration. Had

he been born an Englishman, the 'occupations' and certain other features of his system, which even to-day his followers lack the courage to abandon, might have been conspicuous by their absence. Froebel created a 'garden' for the children, it is true, but not in all respects was it superior to the unofficered 'Paradise' of Gutsmuths. The latter was more English-minded so far as play *per se* is concerned, and did not let the exigencies of life carry him so far from the cardinal thought of Schiller, 'man is wholly man only when he plays.' One can hardly help wishing that Gutsmuths had been gifted by the Muses, or that Froebel had never heard the hum of toil or the whisperings of metaphysics.

Colozza on Play Phenomena.—The psychology and pedagogy of play form the subjects of a recent volume by Professor G. A. Colozza, whose views may be thus summarised: Play is the superfluity of energy over and above the essential needs of life,—at once the equivalent of accumulated energy and the means of its augmentation. In the little child the need to play increases in proportion as it plays; the more it plays, the more it wishes to play. But mere superfluity of energy is not alone sufficient to produce play. Besides this superfluity of energy there must be also a more or less high degree of psychic activities. Those animals play the most who have this reserve capital, together with this psychic activity. Out of the great struggle for existence has come this happy faculty of play. The young of all animals play—their infancy is a time of joy and gladness, the age of play. As we go up the scale of life, the development of play from the indefinite to the definite, from the homogeneous to the heterogeneous, follows the general law of physical and psychical evolution—from the lower animals to the higher, from the higher vertebrates to the human child, from the savage child to the civilised child. The great human factors—imitation and imagination—play a most important *rôle* in child-amusement; but from the struggle for life survive also the love of victory, the instinct for conquest, the need of fighting, all of which express themselves in certain plays and games: 'the chess-player,' *e.g.*, 'without knowing it, obeys to-day the instinct of conquest of his ancestors.' In later childhood a rather large *rôle* must be assigned to deliberate invention and fiction, and to what may euphemistically be termed 'the

pleasures of the imagination.' Play is a great social stimulus: 'The lively pleasure which is felt in play is the prime motive which unites children. Child-societies are play-societies. Collective play is play *par excellence*. In it every child is spectator and actor, and experiences a variety of feelings and emotions—satisfaction, pride, triumph, emulation, etc. In collective life arise divers varied relations, from which come the correlative feelings which stimulate child activity to express itself according to this or that pleasurable emotion.' In play, too, occurs the first development of art, of the æsthetic instinct in the child; and here, as with the savage, ornament sometimes precedes utility. There are many games in which dressing, personal adornment and the like are the chief factors. Then, when music is added to the child's possessions, a new series of plays appears, in which rhythm, cadenced sounds, singing, dancing, etc., fill out the round of pleasurable expression; with the children of the poor, the noise made by knocking two stones together serves in lieu of the musical luxuries of the rich. The surroundings of childhood—physical, psychical, social, historical, artistic—exert considerable influence upon the plays and games of the human young, as Boccardo, Fornari and Perodi have noted. A peasant's child in the Apennines is differently encompassed from an American child in one of the New World's big, bustling cities, with all its wonders of modern skill and invention. Seasons, and climates too, are modifying factors, as also are country and city, riches and poverty, religion and politics, militarism and industrialism. Puppet-shows are unknown to some peoples, and to very many children, while many others are largely content with language-plays. The 'mathematical recreations' of the seventeenth and eighteenth centuries may be compared with the political and commercial aspects of many of the parlour-games of the present day. The stimulative *rôle* of child-play is remarkable: 'If the progress of the mind is determined by increase of the products of experience, child-play has an indubitable value. The experiences of the child almost always take the form of play; in childhood, to play is synonymous with to experiment. Every new play is a new experience, and this, in its turn, gives rise to new knowledge, new feelings, new desires, new acts, and new abilities.' Play and playthings can serve as excellent culture-implements—the

memory (as in word-games, repetition-games), the feelings and affections (as in many of the animal-games and social plays), the sex and domestic instincts (dolls and allied playthings), are all subject to influence and education. In a word, 'the plays of childhood are a microcosm possessing almost all the elements of life. *Amour propre*, self-confidence, courage, astuteness, order, command, obedience, all are there.' The infinitude of child-play is capable of exciting any feeling or emotion. As Mme. Kergomard says: 'Play is the child's labour, its trade, its life, its initiation into society' (120, pp. 8, 47, 65, 91, 216).

Pedagogically much is implied by the facts that idiots are not playful, and that the wisest of men is not wise enough to command the games of children. The marionettism of extreme Froebelians, the neglect or despisal of invention prevalent in certain kindergartens, the fetishism of the 'gifts,' the namby-pambyism of not a few doll-cults, the caricatured savagery of toy-soldierdom, the baneful luxury of the elegant playthings of many of the rich, servile imitation (the refuge of idle and careless parents)—all these are enemies to the real educative aspects of child-play, which has need of continual 'becoming,' of motion, life, the natural, invention, creation, all the progressive factors of human existence and human activities. The two pedagogic laws formulated by Colozza, as a result of his study of play, are these: '(*a*) the teacher must not urge on too quickly the appearance of play; (*b*) when children are tired of carrying on a given play, the teacher ought not always to let them have absolute rest, but should enable them to carry on plays of a different sort.' The first necessity for the proper exercise of the play-instinct in a child is a maximum of child-activity with a minimum of adult interference. In connection with the discussion of the place of play in pedagogy, another study by Colozza—'The Power of Inhibition'—is also well worth reading. The author, whose point of view is that reflection is not a cause, but the result of the power of inhibition or arrest, physiologically considered, and that the human will is quite capable of being educated, appeals to teachers and the educators of modern society to make a greater use of this faculty, which, though in asceticism, with the exaggerated ideas of privation and mortification of body to save soul, or soul to save soul, it has been abused in

all lands and in all ages, yet has vast practical advantages in repressing and correcting the wild impulses and caprices of childhood, no less than the vagaries and inconsistencies of the individual members of normal human societies.

Education by Play.—According to Miss Lombroso: 'Play is for the child an occupation as serious, as important as study and work are for the adult; play is, in fact, his means of development, and he needs to play, just as the silkworm needs continually to eat leaves' (369, p. 117). Indeed: 'All the impressions, sensations, scenes that throng around him, he needs to ruminate over, to turn about on every side, to be their author and actor, in order to assimilate them,—all this he accomplishes by means of play.' Plays are 'the child's most original creation,' and they form for him a sort of gymnastic that helps to develop without fatiguing him, in which, too, he can exercise to the full the 'pleasure of explaining his own activity' (so early prominent in childhood), his instinct of imitation, his power of imagination, and his life in the past of the race. The movement of play, 'which, at first sight, might seem a dissipation of much activity, really gives occasion for a more frequent respiration, and an exercise of muscular and pulmonary activity, by means of movements which fatigue him very little; play is a real work of preparing the ground, which disappears with adolescence when the ground (the mind) is ready, broken, to receive the seed' (369, p. 171). Since play has special forms which favour muscular activity, mental alertness, imitation, imagination and invention, memory, language, —is, in fact, a sort of physical and psychical necessity—Miss Lombroso asks (369, p. 136): 'And why not try in the schools a method of teaching by means of play (like the embryo-attempt in the institution cited by Perez)? It is certain that from it would result for the child, besides a great physical pleasure, a real intellectual enjoyment; things would impress themselves upon his mind with an altogether different vivacity and freshness than what he feels when he has to learn them by means of an arid and banal nomenclature.' But there is danger of too much adult interference here.

Attempts at education through play are by no means new in the world. Froebel with his 'kindergarten,' Johnson with his 'play-school,' and Tsanoff with his 'playground,' have all had their forerunners in the past among primitive peoples, or in

philosophers and reformers of the earlier ages of mankind. Vittorino da Feltre (1378-1446), the Abbot Melani (1748) and Jacopo Stillini (1669-1770) saw and utilised, as did Ferrante Aporte (1791-1858) before Froebel, some of the pedagogical resources of play. And as Groos points out (253, p. 517), Böldicke, who found his inspiration in John Locke and Pastor Baratier, announced in his programme in 1732 the 'Locke-Baratieran method, *i.e.*, a proposal, by the aid of play, music, poetry, and other enjoyable things (in which can be presented the most important truths), so to educate (to the glory of the Creator), within twelve years, ten superior boys, that in their fifteenth year they will understand German, Latin, French, Italian and English, and be able to demonstrate the most important truths from the first principles of world-wisdom.' The riddle-plays of Basedow are also cited. Groos recalls the fact that in 1776 Schlosser had emphasised the distinction between work and play, which was the problem of the school, imitation and play serving as preparation for earnest work of later years among primitive peoples, where work and natural instincts are not so dissonant as in civilisation, where the change is to earnest, persistent activity, not attractive in itself, but a necessity for survival. But there is a good deal in the view expressed by Dr D. G. Brinton: 'The measure of value of work is the amount of play there is in it, and the measure of value of play is the amount of work there is in it' (78, p. 117). To deprive instruction of all the charm of play is not to be thought of; for, as Dr Groos observes, the *rapprochements* between play and work are such that the highest and noblest form of work lies very close to play in its possession of that delight in activity, which is the chief characteristic of play. The great point here, as elsewhere, is not to allow, as, *e.g.*, Froebel and his successors, especially in their children's songs, seem to have done, the really *naïve* to disappear or become atrophied beyond possibility of evocation for its natural employment (253, p. 520). Absolute non-interference, non-direction, non-stimulation of the play of children by parents or teachers is, according to Groos, 'not merely injurious, but unnatural'; for, as the history of animal and human life tells us, 'the parents are for some time the natural playmates of their offspring,' and play with young children has a natural attraction for almost every normal human being. Parents and teachers,

therefore, have a natural right 'to stimulate play in general, to advance the useful and the good, and to suppress the injurious and the immoral in play.' But never must the *naïve*, the spontaneous be allowed to become the vapidly mechanical. The English proverb, 'All work and no play, makes Jack a dull boy,' and the saying of Jean Paul (253, p. 521), 'I am afraid of every adult, hairy hand and fist, that paws in among this tender pollen of child-flowers, shaking off here one colour, there another, so as to produce the right variegated carnation,' should be inscribed conspicuously in every home and in every school. That not a few children 'hate work,' has been made much of by certain writers, some of whom attribute it to atavism, the young human reproducing the condition of the young race. Riccardi (537, p. 161), who has investigated the predilections of Italian school-children for study and manual work, finds males in all classes of society more frequently without preferences, and less given to study and work than females, facts which seem to be atavistic. Work is therefore largely enforced.

Work and Civilisation.—Work is one of the greatest conquests of man. Says Ferrero: 'Man does not love work—work of muscle or work of brain. I am almost tempted to say that the habit of work is one of the most striking phenomena of human psychology.' Not alone the distaste which savages and primitive peoples generally (the author thinks) proves this, but also the very terms for work in all languages: Hebrew, *assab* (work, pain); Greek, *πένομαι* (I strive, work, suffer); Latin, *labor* (work, pain); Italian, *travaglio* (suffering—*c.f.* French, *travail*, work). The mythic side of the same idea is found in the Semitic story of the origin of work as a punishment for disobedience in Eden—a view paralleled all over the world in the legends of other races who have sought an explanation for the necessity and the disagreeableness of labour (199, p. 13, p. 24).

Through the long effort of ages, as Ferrero remarks, civilisation has inculcated the majority of men with a habit of muscular labour, but this brilliant achievement has come by way of slavery, poverty, and the scaffold. Even now, however, whole classes of the community exist 'who toil not, neither do they spin'—whose every effort is directed toward the task of avoiding work—criminals, prostitutes, vagabonds—classes that, when they do labour, exert themselves only in the most primitive,

atavistic fashion. And the same 'law of least effort' is known to the best of men. Not so successful, however, has civilisation been in its conquest of the habit of mental work, for here the law of least effort has uncounted paths to travel and innumerable by-ways and nooks to explore, and the law of mental inertia finds unending novelties of dissipation. And the civilised human child is averse to work, like the savage.

Ferrero, who holds (an unjustifiable generalisation upon present evidence) that 'the moral quality which chiefly distinguishes the savage and the barbarian from the civilised man of the nineteenth century is violence of character' (primitive man is 'an extremely violent animal'), while 'the fundamental characteristics of the civilised man of the nineteenth century are serenity and equanimity,' thinks that 'the habit of regular and methodical work has destroyed the violent impulsiveness of man's primitive character'—work subduing man by tiring him, and furnishing the basis of all ethics in the self-control which is the first condition of all morality. The uniformity and the regularity of work among civilised nations are one of the greatest triumphs of the evolution of the race.

Play in Savagery.—Vierkandt, contrasting the relative disconnectedness of the impulses which go to make up the *ensemble* of savagery as compared with the systematisation of mental activity which marks the civilised man to-day (although this is, in reality, quite relative also), makes the generalisation —hazardous, unless well-interpreted—that the activity of the savage may be said to be play as against that organisation of culture exhibited by the highest races in historical times. It is evident, however, that Vierkandt underestimates the 'organisation' (as opposed to 'play') which really exists among savage and barbarous peoples, and, on the other hand, overestimates the 'organised' nature of modern civilisation.

In connection with Vierkandt's views, we ought to take cognisance of the opinions of such eminent students of the plays and pastimes of primitive peoples as Culin, who, in his address as President of the American Folk-Lore Society, at Baltimore, 1897, said (134, p. 245): 'Our ideas of a game are primarily associated with mirth, amusement, play, such indeed being the original meaning of our English word. A careful examination of games, however, reveals the fact that they originated, not as pastimes, but as serious divinatory contests.

This is especially true of the games of those we call primitive people, or savages. We quickly find that a distinction may be drawn between these sacred and divinatory games and the mimetic plays of children. . . . Children play at real games as they play at every other serious business of life. They thus perpetuate games that have otherwise disappeared. Hence the value of children's games in our study. At the same time, this observation applies chiefly to the higher cultures. In savagery we deal with the games of adults—first of men, then women—with games so complex that no child-mind could grasp their principles or objects; with games so wrought and interwoven with primitive concepts of nature and the universe, that no modern mind could create or invent them.'

The relation of play and work to the various arts and activities of human social life offers a wide field for investigation. Some have held that the fine arts are merely refined labour, others that they are labour genialised by play. But even with primitive peoples it may often be that play is older than work, art than use (253, p. 56).

From body movements, according to Karl Bücher in his interesting study of *Work and Rhythm* (87), sprang art—dance, music, poetry. The drama, the epic poem and the lyric are all developments from the 'primitive labour song,' which grew out of work done in time or in concert, the earliest rhythms being labour-rhythms. The poet then was a 'maker' in more senses than the Greek, who called the bard ποιτης, ever dreamed of, for he was a 'worker'—*labor primum fecit poetam;* and he was born while music and the dance were still one. The children's song-game of to-day, 'Here I brew, here I bake,' carries us back to the childhood of the race, when, as Payot says of man's willing, his working was done with the co-operation of all his faculties; hands, body, voice, all bore their share in the task.

Children's Games.—The collection of plays and games of children published by Mr W. W. Newell (456) and Mrs Gomme (246) contains innumerable examples of the child's reflection of the labours and duties of the past. These 'survivals' and 'parallelisms' find recognition also in Groos, who, however, hardly enters upon the rich mine of primitive plays and games contained in the publications of the anthropologists of America.

We must not, however, forget the great *rôle* of contemporary

imitation by children of the deeds and actions of their elders, which is very strong indeed among some primitive peoples, as it is in our day. The following items from Rev. J. Owen Dorsey's excellent account of 'The Games of Teton Dakota Children' (172, p. 329) serve to indicate that the weird and sacred things of aboriginal life and thought are not beyond the touch of the children.

'Playing with small things'—*Shkátapi chik'ála*—is the name of a Teton Dakota children's game, which none but girls can play. 'They imitate the actions of women, such as carrying dolls, women's work-bags, small tents, small tent-poles, wooden horses, etc., on their backs; they pitch tents, cook, nurse children, invite one another to feasts,' etc.

Another game played in the spring is called 'They make one another carry packs'—*Wak'in' kichichiyápi*—in which 'some boys or girls pretend to be horses, and carry packs.' Dr Dorsey informs us further: 'The children of each sex imitate their elders. When they pretend to dance the sun-dance, the boys cut holes in their shirts instead of their flesh, and through these holes are inserted the thongs which fasten them to the mock sun-pole.'

These Indian boys and girls also play a 'Ghost game,' described as follows:—

'One erects a lodge at a distance from the village, and at night he comes hooting like an owl, and scratching on the exterior of the tent where other children are seated. Sometimes the ghost whistles just as they imagine that ghosts do. Some ghosts whiten their faces and paint their bodies at random. Others put red paint around their eyes. All this is at night when their mothers are absent. Occasionally the children leave the village in order to play this game, going in a crowd to the designated place. Some ghosts whiten their bodies all over, painting themselves black between the ribs. When they do not whiten the whole face they cover the head with white paper, in which they punch eye-holes, around which they make black rings. The one acting the ghost tickles anyone whom he catches until the latter laughs very heartily.'

Thus early do children learn that from the sublime to the ridiculous is but a step.

Even the priests and shamans are imitated by the children

in the 'Mystery game'—*Wakan' shkátapi*—imitation of the *wakan* men and women :—

'A small lodge is set up at a distance from the village, and in it is made a mystery feast, after which the *wakan* persons sing and give medicine to a sick person, some pretend to be gods (*tawáshichúpi*), others claim to hear mysterious spirits which aid them in various ways. Some pretend to conjure with cacti. Others give love medicines to boys who wish to gain the love of girls, or to girls who wish to administer them to boys.'

Dr J. W. Fewkes and Lieut. J. G. Owens, in their account of the *Lă-lā'-kōn-ta*, a woman's dance of the Tusayan Indians, say[1] : 'Each contestant in the race, as she entered the kib-va, passed to the altar, with the fireplace on her left, and then to *Kwāts'-kā-wa*, touching the crook which he held aloft. After all the runners had done the same, mothers brought their children, and made them follow the example of the runners.'

Of the 'White deer dance' of the Hupa Indians, held every two years, Mr Woodruff says[2] : 'The men in this dance, as in all the others, are arranged according to size and age. The old men are in the centre, and the younger ones next, and on the flanks are the boys. It is customary to have two or three little boys, three or four years of age, in every kind of dance, and the strenuous efforts made by those little tots to imitate their seniors are extremely comical.'

Ferriani protests against a low and dangerous ideal of play for children ; unless it be a powerful physical and moral education, play is worse than work often is (202, p. 270) : 'No toys for sick children, no clown-gymnastics, no plays that occupy the mind of the child to even worse ends than the school-task, but plays in the open air, plays that set the muscles in motion, plays that incite emulation and courage, that act in compensatory fashion upon the nervous system, making the child bold, magnanimous, courteous to his fellows, and ingenious.'

Nerve-shocking play and kindred experiences are bad for the child, 'whose whole nature,' to use the words of Moreau, 'is extraordinarily nervous.' For this reason, Ferriani thinks that the effect of modern theatrical representation—the whole

[1] *Amer. Anthrop.*, V. 123. [2] *Amer. Anthrop.*, V 57.

billowing sea of human passions rushing upon them at once, when robbed of their rightful sleep, and overwhelming them with a flood of new and hurtful sensations—upon young children cannot be other than bad, and the old puppet-shows, once so suited to little children, have taken on a solemn ultra-childhood aspect. Books and newspapers of certain classes lie under a like ban, and many sorts of tales and stories as well; the saying of Horace, '*ridendo dicere verum*,' Ferriani remarks, ought never to be forgotten; too mean and too high, too weak and too strong literature is alike of evil influence. There is a vast difference between child-literature and childish print or word of mouth; the words and thoughts of a 'reduced adult' are not necessarily those of a real child. With plays and books go often the first friends and companions of the child. One mistake, that it is very easy to talk to children, is about as commonly entertained as another, that it is exceedingly easy to write for them. The superficiality of parents, relatives, nurses, etc., is one of the great dangers to which childhood is exposed; too often they neither know the child, nor are known of him.

Principal Russell, in the admirable introduction which he has furnished to the collection of observations on *Imitation and Allied Activities*, published by the State Normal School at Worcester, Mass., has aptly described the *rôle* of play, which must have its course before the child can settle down to the work which is his later and serious occupation (291, p. xxii.): 'He casts about for an opening into the attractive activities that he sees going on in the adult world around him, and, reckoning perforce with his immaturity and *impuissance*, straightway adopts as the only profession possible to his small executive powers, the drama. The long-past achievements of his ancestors reverberate and tingle in his blood, impelling him to action; but all his efforts are ludicrously futile beside those of the giants about him, and meet only with indifference or jeers. The world of law and order and systematic endeavour is too tough for his assimilation. It must first be softened into myth and make-believe by the solvent juices of fancy, which the glands of his little mind fortunately pour out in abundance. He cannot *live* life; he must dramatise and *play* it. So he becomes an actor, an amateur in the good sense,—

Filling from time to time his humorous stage
With all the persons, down to palsied age,
That Life brings with her in her equipage.

Thus in imitation play, in obedience to the biologic law of recapitulation, the child epitomises and rehearses the fundamental experiences of the race, at the same time that he is sounding the depths and shoals of his own nascent powers, and thereby preparing day by day to take part in the real work of life which the coming years will bring. Play is thus seen to be at once reminiscent and anticipatory, a welding of the future to the past.' And all over this child's season of apprenticeship, his *Wanderjahre*, is written, for the adult *noli me tangere*, let well enough alone.

Groos's Theory of Play.—Professor Karl Groos, of Basel, who holds that 'the play of the young being once successfully solved, the play of the adult will offer no special difficulties,' maintains that 'the play of youth depends on the fact that certain instincts [with Ziegler and Weismann, Dr Groos refers all instincts to natural selection], especially useful in preserving the species, appear before the animal seriously needs them. They are, in contrast with later serious *exercise* (*Ausübung*), a *preparation* (*Vorübung*) and *practice* (*Einübung*) for the special instincts' (252, p. xx.). The biological significance of play seems to lie in the fact that 'perhaps the very existence of youth is due in part to the necessity for play; the animal does not play because he is young, he has a period of youth because he must play.' According to Groos, 'the psychic accompaniment of the most elementary of all plays, namely, experimentation, is "joy in being a cause,"' and the more subtle psychic phenomenon connected with the subject '"make-believe," or "conscious self-illusion."' Experimentation, 'the commonest of all kinds of play,' is to be looked upon as 'the principal source of all kinds of art.' 'From experimentation in general,' says Groos, 'three specialised forms of play arise, analogous to the human arts, and their differentiation leads us to the three most important principles of the latter. They are courtship, imitation, and the constructive arts, and the three principles involved are those of self-exhibition, imitation and decoration. These principles are expressed in art as the personal, the true, and the beautiful. There is no form of

art in which they are not present together, though one usually dominates, while the others are subsidiary. This is evident even in the animal world' (252, p. 327). The following table exhibits in outline, how, according to Groos, 'all forces efficacious in artistic production are referable to the central idea of play, and, therefore, to an instinctive foundation'—out of instinct springs play, out of play develops art:—

PLAY.

Experimentation.
(*Joy in being able.*)
(*Pretence: Conscious self-deception.*)

Self-Exhibition. The Personal.	Imitation. The True.	Decoration. The Beautiful.
With Animals { Courtship arts.	Imitative arts.	Building arts.
With Man { Dance with excitement.	Imitative dance.	Ornamentation.
Music.	Pantomime.	Architecture.
Lyric poetry.	Sculpture.	
	Painting.	
	Epic poetry.	
	Drama.	

The Real Significance of Play.—This scheme is, doubtless, imperfect, as critics of Groos's book have taken occasion to point out, but the idea which underlies it all is a most suggestive and illuminating one, when rightly understood. In his latest work on the play of man, which has recently appeared, Groos makes clear this point (253, p. 492), when he observes: 'I presuppose everywhere the existence of innate impulses (*Triebe*), and assume that these have only led to play-exercise (*Spielende Uebung*) through the organisation of a period of youth. Play will, in general, serve more to tone down (*abschwächen*) instincts already present than to strengthen them or create entirely new ones.' In his two books Groos has gathered together a vast amount of material in support of this theory, which certainly possesses many merits not belonging to others

in the field. Youth was furnished in the order of natural development to the animal as a means of utilising and controlling the wealth of innate instincts and impulses in a new and higher fashion. In a word, animals, and man especially, possess youth because it was necessary to create art (and civilisation) from instincts through the transforming power of play. Childhood is the period in which, by the eminently supple and attractive instrument of play, the natural instincts and impulses, so exuberant and so far-reaching, make possible the normal, healthy, active, ingenious, self-knowing and self-trusting adult. Youth has made possible the passage from the unconsciousness of instinct to the art of civilisation, and play survives sufficiently even in adult life to prevent this art degenerating into a mere mechanism. Just as helplessness in infancy is the guarantee of adult intellect, play in youth is the guarantee of adult morality and culture. The prolongation of infancy in the human race needed as a corollary the activity of youth to secure the wisdom and the strength of mature life. Play may be termed the genius side of instinct, and youth its inspirer. Man had to be young to be civilised; had he no youth and no play he were perpetually a savage.

Play, in childhood, as Groos has abundantly shown, is concerned with everything; emotions, feelings, acts, thoughts, imaginings, speech, all begin their career under its subtle, shaping influence, and the really genial among adults never lose in science, art, literature, the 'play,' which makes it a joy to be alive and to use life. Language, poetry, art, science, all begin in child-play; the orator, the poet, the artist, the seeker after knowledge 'play' as surely and as *naïvely* as the child.

ESKIMO CHILD.
(From *Rep. U.S. Bur. of Educ.*, 1894.)

CHAPTER III

THE RESEMBLANCES OF THE YOUNG

The Resemblances of the Embryo.—In his *Observations on the Developmental History of Animals* (18, I. p. 224), the first part of which was published in 1828, Dr E. von Baer, after stating that his investigations revealed the fact that 'in the embryo the general characters developed first, the less general later, the special last of all,' goes on to say that 'the embryo of a higher animal form is never really like any other [adult] animal form, but resembles its embryo only.' He regarded it as 'not yet proved that every embryo of a higher animal form must gradually pass through the lower animal forms' (p. 220). The more diverse, also, two animal forms are, 'the farther back we have to go in the history of their development to discover a coincidence.'

Commenting upon these views, Professor F. M. Balfour (25, p. 2) remarks: 'Von Baer was mistaken in thus absolutely limiting the generalisation, but his statement is much more nearly true than a definite statement of the exact similarity of the embryos of higher forms to the adults of lower ones.' The embryo of man is vastly more like the embryos of the anthropoid apes than like the adult apes, but we can be certain that the old apes have varied very much from the more human type of their embryos, succeeding also in becoming much different from adult man at the same time. The nearness of the young anthropoid to the young human decreases continually with age, and the old anthropoid is entirely lacking in many of the human characteristics which his fœtal life and early infancy seemed to promise as permanent possessions.

The Young Ape and the Human Infant.—In his discussion of the skulls of men and apes in 1869, Dr Rudolf Virchow remarked: 'The resemblance of the young apes to human

children is very much greater than that of the old apes with grown and fully-developed men. The mother who calls her child a "little monkey," involuntarily gives evidence of the fact that the human infant has in or about it certain animal traits. Nowhere does the analogy manifest itself more strongly than just in the construction of the skull. The small size and forward projection of the facial bones (those of the jaw especially), the more delicate formation of the eye and its surroundings, the smooth arching of the roof of the skull, the general form of the cranium, the relation of the individual skull-vertebræ with one another bring the head of the young ape so close to that of the child, that the resemblance is startlingly great. But with every month and year of life the skull of even the most human-like apes becomes more unlike that of man' (667, p. 22). It is in the direction of the massive jaw and its strength of bony framework that the energy of growth in the gorilla's skull is expended—the brain of the apes growing least of all. While the hugest ape has almost the teeth of an ox, he has only the brain of a child. Evidently, therefore, 'no man could ever arise through the continuous development of the ape.' The lowest monkeys, *e.g.*, the ouistiti, a little creature inhabiting the east of Brazil, exhibit a greater human likeness in the bony structure of the head than do the anthropoid apes. Virchow pointed out also that in the duration and rapidity of development, both of the whole individual and of his several parts, there exists a marked difference between the apes and man. The apes have in general a short life and a rapid development, and are born in a condition of bodily and mental maturity more resembling that of animals lower in the scale of nature than that of man—the highest apes attain, at most, their full growth and development, while man remains as yet in the early bloom of youth, and are sexually mature before man has passed out of childhood. Not only does the second dentition occur far earlier in the apes than in man, but even before its establishment the full development of brain has, as a rule, already taken place in the former, while with the latter, what may be termed its essential development has hardly yet begun. Virchow admits, however, with Vogt and others, that the skulls and brains of microcephalic congenital idiots present a much greater resemblance to those of the apes than the corresponding parts and organs of intelligent, well-developed

men, but prefers to consider these peculiarities (the relatively greater development of the bones of the face and the jaw, *e.g.*) as arrests of development affecting one region of the body only; the rest of the body, generally, is so thoroughly human as not at all to justify the term 'ape-men' which has often been applied to these microcephalic idiots. It is in the latest and most complicated acquisition of the human race, the brain and the finer development of the face that these microcephalic idiots are lacking, while they possess many other peculiarities which no ape has ever inherited or acquired. So also with human monsters and malformations whose congenital departures from the normally human cause them at times to resemble in striking fashion in some limited organ or portion of the body certain of the lower animals, and Geoffroy Saint-Hilaire was as justified in calling the children born altogether or partly limbless *phocomele*, as was Vogt in styling the microcephalic idiots, 'ape-men.' We must be careful to distinguish the evolutional identities and likenesses from the accidental coincidences and resemblances.

Hartmann, in his work on the *Anthropoid Apes* (289, p. 301), quotes, approvingly, the words of Vogt: 'When we consider the principles of the modern theory of evolution, as it is applied to the history of development, we are met by the important fact that in every respect the young ape stands nearer to the human child than the adult ape does to the adult man. The original differences between the young creatures of both types are much slighter than in their adult condition: this assertion, made long since, in my lectures on the human race, has received a striking confirmation from recent autopsies of young anthropoids which have died in the Zoological Gardens of Europe. In proportion to the age of the specimen, the characteristic differences in the form of the jaw, the cranial ridges, etc., become more evident. Both man and apes are developed from an embryonic condition, and from the period of childhood in a diverging or almost opposite direction into the final type of their species, yet even adult apes still retain in their whole organisation features which correspond to those of the human child.'

Effects of Age.—Havelock Ellis, in his masterly study of *Man and Woman* (183, p. 23), makes clear the implication carried by these facts: 'The ape starts in life with a considerable human endowment, but in the course of life falls far

away from it; man starts in life with a still greater portion of human or ultra-human endowment, and to a less extent falls from it in adult life, approaching more and more to the ape.' In other words, with age the ape loses the comparatively human character of his infancy, and man, in like manner, the comparatively ultra-human character of his early childhood. Fœtal life is largely upward evolution, development after birth largely 'a concrete adaptation to the environment, without regard to upward zoological movement.' As Mr Ellis says: 'It seems that up to birth, or shortly afterwards, in the higher mammals, such as the apes and man, there is a rapid and vigorous movement along the line of upward zoological evolution, but that a time comes when this fœtal or infantile development ceases to be upward, but is so directed as to answer to the life-wants of the particular species, so that henceforth and through life there is chiefly a development of lower characters, a slow movement towards degeneration and senility, although a movement that is absolutely necessary to ensure the preservation and stability of the individual and the species.' Thus is the child the 'father of the man,' and the 'Fall,' if there be one for the race, is in the descent from the high promise of childhood to the comparative barrenness of senility.

The present writer has heard Professor E. H. Russell, of the State Normal School at Worcester, Mass., interpret in the light of Havelock Ellis's statements the lines in Wordsworth's great ode:—

> 'Shades of the prison-house begin to close
> Upon the growing boy,'

and it is in this sense that we may interpret many of the poets and philosophers who have sung and written of 'the golden age of childhood,' 'the heaven of infancy,' from the forgotten bards of antiquity down to Swinburne, who never tires of hymning 'the immortal Godhead incarnate in the mortal and transitory presence of infancy.'

Some Resemblances in Age.—A possible use for the retention of some of the characteristic resemblances of all the races in their childhood, may occur in the so-called 'Resemblances between Husband and Wife,' lately studied by M. Fol. It is a matter of ancient remark that old married couples seem to look like each other, and the commonly-received explanation

of the phenomenon is that constant companionship, common interests, common acts, uniformity of life and the like have produced the result in question. According to M. Hermann Fol, however, the case is quite different, and the resemblances of aged married couples spring neither from this source, nor from the supposed general tendency of old people to look alike, a factor which the more primitive *milieu* of the aged and their more primitive habits among civilised races accentuate, perhaps, since with savage and barbarous peoples these same resemblances are said to be very marked. Both the tendency of the old to look alike and the power of conjugal life to profoundly modify, if not altogether to abolish, initial differences, seem to have been assigned an exaggerated *rôle*. Fol examined the photographs of 251 couples (personally unknown to him) very carefully with respect to resemblances between husband and wife. The results are exhibited in the following table:—

Number of Couples.	Per cent. of Resemblances.	Per cent. of Non-Resemblances.
Young, . . .198	66.66	33·33
Old, . . .53	71.70	28.30

It would appear, therefore, that the resemblances between husband and wife in old age are not due to the assimilating forces of conjugal life, but the result of resemblances existing at the time of marriage; in other words, people are led to marry according to the law of conformities and not according to that of contrasts, the mutual attraction is what the lovers have in common, not that in which they differ. The love-period in man has often been styled his 'second childhood,' and there is something of truth lurking behind the wit in the phrase. In a sense, physically and mentally, as children all over the world resemble each other, so, at the great selective epochs of human existence, it is the likenesses that cast the die. If one might, somewhat hazardously, generalise, just as the play wherein all children so resemble each other changes to art which causes so many resemblances between its devotees, so genius in like manner represents the common intellectual capacity of children, and the likenesses among the

so-called classes and groups of mankind in their adult expression are caused by the persistence of the resemblances of childhood and not by the abolition of antecedent differences. Woman, moreover, is nature's attempt to preserve the child, generally, in the adult, while genius must not infrequently represent her still rarer effort to do so in the other sex. One might add to the declaration of the great Chinese sage that 'genius is the preservation of the pure ideas of childhood,' that art is the preservation of the play of childhood, science of its curiosity, invention of its fancy, religion of its faith — and geniuses, artists, scientists, inventors, the pious, resemble one another in their respective groups more through what they have retained of the universality of childhood than through the particularities acquired in the passage to manhood. Here the child is 'father of the man,' and the 'consciousness of kind' (to use Professor Giddings's well-known term, which is nothing more than another turn of the old saw, 'birds of a feather flock together'), which plays so large a *rôle* in later life, is but the effort of the kinship of all childhood to perpetuate itself as far as possible everywhere, in adult life. Childhood possesses the kinship of heredity; manhood, except in genius and in woman, and scantly elsewhere among the races, bears the marks of environmental influence, strong enough all too often to create striking dissimilarities; and intellect, the latest acquisition of the race, suffers most. Children, in fact, are born, adults made.

Racial Resemblances of the Human Child.—Man, like other animals, is most teachable when he is a child, as appears from the fact that the children of all known races of man are, up to the period of puberty, perhaps, much more on a par as regards intelligence than adults of these various races, just as they are, in so many respects, more alike physically.

Professor G. Fiamingo, in the course of his article on 'The Conflict of Races, Classes and Societies' (205, p. 408), observes: 'No white child was ever born with a greater intellectual development than that of a negro child.' This, Fiamingo declares, follows from Flechsig's discovery that the nervous fibres of the brain in new-born children are almost entirely deprived of myelin, and whatever resemblance there is in this respect to the lower animals characterises both the negro and the white child. Citing the statement of Fouillée that 'man in a state of nature is, like a child, a sensitive, impulsive being,'

Fiamingo goes on to say: 'And yet the psychological aptitudes of the child born to civilised parents are enormously greater than those of the savage child. Exaggerating this fact, Mismer writes: "The child of an uncultivated race is obliged to learn everything, while the child of the civilised race has only to remember." It is then absurd to expect that a coloured man, brought into a civilised society of whites, should find himself completely adapted to his social environment and proceed to contribute to new scientific discoveries. Not only the psychical but even the physiological superiority of the white man has been slowly acquired.'

Mr Benjamin Kidd (325, p. 295) says with reference to the African race in the United States: 'The children of the large negro population in [some parts of] that country, are on just the same footing as children of the white population in the public elementary school. Yet the negro children exhibit no intellectual inferiority; they make just the same progress in the subjects taught as do the children of white parents, and the deficiency they exhibit later in life is of quite a different kind.' This deficiency is largely moral and social and comes after puberty, and has not yet been shown to spring from intellectual defects—the negro runs much greater risk of becoming a criminal than of being an idiot. Mr G. R. Stetson, who holds strictly to 'higher' and 'lower' races, cites, in the course of an article on 'The Educational Status of the Negro' (616, p. 30), the following opinion of Mr E. Hyde of the Hampton Institute: 'During my trip in the South I was struck by the number of bright coloured boys and girls who were graduating from the grammar and high schools at 15 or 16 years of age. The question was asked, "What is there for them to do?" and the reply was made that there is but little for them to do unless they are taught to work and become ambitious to learn trades.' It would appear then that the young negro is quite as capable as the white child of being crammed with Latin and Greek and the rest of the manifold curriculum of the day, and quite as likely to receive 'too much in the line of mere intellectual training.'

Primitive Genius. — A youthful learned proletariat could almost as readily be produced among the blacks as among the whites. Dr F. Boas (60, p. 18), referring to the argument from skull-capacity to brain-size and intelligence [the group of individuals having capacities from 1450 to 1650 cc. includes

55 per cent. of Europeans, 58 per cent. of African negroes and 58 per cent. of Melanesians; while 50 per cent. of whites, 32 per cent. of Melanesians and 27 per cent. of negroes have capacities above 1550 cc.], observes: 'We might, therefore, anticipate a lack of men of great genius, but should not anticipate any great lack of faculty among the great mass of negroes living among whites and enjoying the advantages of the leadership of the best men of that race.' The social gap is more noxious than the intellectual gap. The history of Bornu, in Africa, as Dr Boas suggests, puts the negro forward in his best light, and may reasonably be compared with the achievements of negro children in white schools. So, too, with the American Indian. An Arizona Congressman is reported to have said, 'There is as much hope of educating the Apache as there is of educating the rattlesnake on which he feeds.' But Mr O. B. Super (622, p. 235), writing in 1895, informs us that the resident physician at the Indian School at Carlisle, Pa., is Dr Carlos Montezuma, a full-blooded Apache, who, working his way through school, graduated at the age of twenty-three from the Chicago Medical College, and has since his appointment performed the duties of his office in an eminently satisfactory manner. Even more remarkable is the career of Dr Oronhyatekha, a Canadian Mohawk, college graduate, physician, and at present the head of the great secret society of 'Foresters.' But with Tecumseh, Red Jacket, Nez Percé Joseph, King Philip and other great men, the Indian race hardly needs to plead its possession of intellect. As Captain Pratt, the Superintendent of the Carlisle School, once said, 'The great difference between us and the Indian is a difference in opportunities.' Dr Montezuma has perhaps struck the keynote of the whole matter when he says, 'My case is exceptional only in so far as I have received exceptional treatment.' If the right opportunity is offered, the right appeal made, the Indian can, and does, respond. The number of Indian physicians, clergymen and athletes already educated and active in North America, to say nothing of politicians and statesmen in the Republics of Central and South America, seems to indicate some lines along which these aborigines can readily and highly develop themselves. So eminent an authority as Dr. D. G. Brinton has said (77, p. 15): 'The question has often been considered whether the mental powers of the savage are distinctly inferior. This has been

answered by taking the children of savages when quite young and bringing them up in civilised surroundings. The verdict is unanimous that they display as much aptitude for the acquisition of knowledge, and as much respect for the precepts of morality, as the average English or German boy or girl, but with less originality or "initiative." I have been in close relations to several full-blood American Indians who had been removed from an aboriginal environment and instructed in this manner, and I could not perceive that they were either in intellect or sympathies inferior to the usual type of the American gentleman. One of them notably had a refined sense of humour, as well as uncommon acuteness of observation.'

Mr Kidd assails the celebrated Damara-dog comparison of Galton's by citing the remarkable intellectual progress made by children of the Australian aborigines, who are, 'by the common consent of the civilised world, placed intellectually almost at the bottom of the list of the existing races composing the human family . . . the zero from which ethnologists have long reckoned our intellectual progress upwards' (325, p. 294). 'It is somewhat startling, for instance,' says Mr Kidd, 'to read that in the Australian colonies it has been observed that aboriginal children learn quite as easily and rapidly as children of European parents, and, lately, that for three consecutive years the aboriginal school at Remahyack, in Victoria, stood highest of all the State schools of the colony in examination results, obtaining 100 per cent. of marks.' Rev. John Mathew (415a), whom Mr Kidd cites on this point, observes further: 'It is astonishing how easily and completely young blacks, not cut off from intercourse with their relatives, but living and working constantly among the whites, fall into European modes of thought.' The limit of the native's range of mental development, Mr Mathew thinks, 'is soon reached'—lack of application, want of stability and capricious morals characterising them later in life, together with inordinate vanity and love of praise. Here, again, it is not in sheer intellect that the aboriginal child is deficient, but in the other faculties of a stable manhood. From long experience with the Australian natives, Mr Edward Stephens (614a) entertains a very favourable opinion of their capacity for mental improvement; and observes, in addition: 'I say fearlessly that nearly all their evils they owed to the white man's immorality and to the white man's drink.' Something about the futile and ill-considered attempts

to civilise the aborigines of Australia, as well as about the good results of certain other efforts, may be read in Dr Thompson's *Moravian Missions* (637, pp. 415-451). The school at Ramahyuck (Remahyack) is a Moravian establishment, which, in 1874, was ranked by the Government inspector 'highest on the list of rudimentary schools in the Province of Victoria'; and the arrowroot cultivated by the natives secured a prize at the Melbourne Exhibition and a prize medal at Vienna. At another Moravian school, at Ebenezer, mention is made of 'a boy of eight, who had been caught less than two years before, at which time he knew not a word of English, and had never seen a book, but now could read tolerably well, and had made fair progress in all elementary branches, writing included.' Of the natives in other parts of the country, we are told 'many have acquired ease and correctness in the use of the English language, have become skilled riders and superior shepherds.' Of the adult Australian Mr Stephens takes a comparatively high view, describing a full-blooded native of his acquaintance as 'an agreeable companion, interesting in conversation, full of anecdote and adventure.'

This mental capacity of the children of aboriginal people, seen in Australia amid so many disadvantageous factors of environment, is still more in evidence in its own *milieu*. Very interesting in this connection are the experiences of missionaries with their phonetic alphabets for recording primitive languages and teaching the natives to read and write. Mr J. C. Pilling[1] tells us that the Cherokee child learns to read and write in two and a half months, the average Cree child learns to read fluently in a few weeks. Precocity in learning to read and write, even with our unphonetic and cumbersome system of English spelling, has been again and again reported in Indian children.

This precocity of childhood may be said to characterise all the known races of man, and to be even more marked the more primitive the race. On this point, 'It is an interesting fact,' says Havelock Ellis (183, p. 177), 'and perhaps of some significance, that among primitive races in all parts of the world, the children, at an early age, are very precocious in intelligence.' And again, 'It seems that, the lower the race, the more marked is this precocity, and its arrest at puberty. It is a fact that must be taken in connection with the peculiarly

[1] *Amer. Anthrop.*, VI. p. 184.

human character of the youthful anthropoid apes and the more degraded morphological characters of the adults.' The same writer cites from Lord Wolseley the following *à propos* of the Fantis, an African tribe: 'The boy is far brighter, quicker, and cleverer than the man. You can apparently teach the boy anything until he reaches puberty; then he becomes duller and more stupid, more lazy and more useless every day'; and Leclère has said something similar of the Cambodians. But over against these statements we can set the corresponding (though less marked) phenomena of puberty in our own races—'the silly years,' for an arrest of mental development actually seems to take place—and the law of retardation which apparently governs the achievements of the human being outside the bounds of childhood. The child grows fast, learns fast, lives fast, in a sense, at least.

Powers of Early Childhood.—What has been called the 'law of rapid activity' is perhaps the most marked characteristic of growing childhood as compared with adult age. 'This rapidity of action,' says Dr Alvarez (5, p. 18), 'marks the child, from the smallest organic action to the highest psychic acts and voluntary movements,' and even characterises him in perturbed as well as normal functionality, in health, and in disease. In childhood we see rapidity of nutrition, circulation, respiration, digestion, secretion, pain, pleasure. Like his griefs and his joys, the child's diseases and maladies evolve quickly, and the remedies are quickly absorbed, do their work, and are eliminated.

Here, too, lies, in great part, the explanation of the wonderful progress in acquisitive development of early childhood, and the remarkable decrease which characterises the human individual later on in life. This relative decrease of progress has been noted by various writers, from Tiedemann, the father of 'child-psychology,' in 1787, down to the present time. Egger sums up the facts in these words (181, p. 12): 'In the first period of its life, the child's progress is marked from day to day, then from week to week, then from month to month, then from year to year.' To this statement he adds: 'The age when the mind has as yet no teacher (properly understood) is perhaps that in which it learns the most and the quickest'—the number of new ideas acquired during this period (from birth to about five or six years) as compared with the achievements of later life is indeed remarkable.

Genius.—In spite of the objections of some psychologists, there is much truth in the saying of Goethe, 'If children grew up according to early indications, we should have nothing but geniuses'; and all the play of environment since the race began has not removed the fact emphasised by Schopenhauer, 'Every child is to a certain extent a genius, and every genius is to a certain extent a child.' 'Genius,' says Mr C. H. Cooley in a recent essay (126, p. 317), 'is that aptitude for greatness that is born in a man. Fame is the recognition by men that greatness has been achieved. Between the two lie early nurture and training, schools, the influence of friends and books, opportunities, and, in short, the whole working of organised society upon the individual. One is biological, the other social; to produce geniuses is a function of race, to allot fame is a function of history.' Mr Cooley offers much in disproof of Galton's assertion that genius is independent of schools and social conditions.

That the spread of education and the existence of a democratic spirit and democratic institutions further the development and the recognition of genius is a view that has much in its favour, judged by the history of Greece, Italy, the Netherlands, England, Scotland, and the United States—especially in those epochs when 'the people' were more or less in evidence. And here it is worth remembering that childhood is essentially democratic, and it possesses in its collective aspect that very 'voice of the people,' in its most *naïve* and genial form. Mr Cooley attaches considerable importance to the group-fashion in which genius is wont to appear, *e.g.*, in Athens, 530-430 B.C. (statesmen, soldiers, literary and scientific men, philosophers, poets, etc.); in Italy, fifteenth century (painters); in England, 1550-1650 (literary and scientific men, poets, philosophers, statesmen, soldiers); America, 1783-1814 (literary men). Consideration of such groupings might well lead one to believe that there is 'something in the air' when geniuses are born, something akin, perhaps, to the 'feeling' which is present at the production of the best things of childhood—races may be 'moved' as children are sometimes. The history of the outburst of dramatic genius all over western Europe in the last half of the sixteenth and the first half of the seventeenth century is most remarkable. The epoch from 1550 to 1650 is in fact the most glorious age the world has ever known. It saw the birth, in England, of

Shakespeare, Marlowe, Jonson, and many other dramatists of high rank; in France, of Corneille, Racine, Molière; in Spain, of Calderon and Lope de Vega; in Holland, of Vondel. And of other men of genius there were born in this age, in England, Spenser, Milton, Dryden, Bacon, Locke, Newton; in France, Descartes; in Spain, Cervantes and Velasquez; in Holland, Spinoza. Nay, more, the twenty years, 1550-1570, count the birthdays of Spenser, Marlowe, Shakespeare, Bacon, Lope de Vega; and the twenty years, 1620-1640, saw born Dryden, Locke, Molière, Racine, Spinoza. If one looks at the epoch 1550-1650 and the age 1450-1550 which preceded it, one may be led to believe that it represented one of those resurgences of the genius of the race, in its most childlike form, the dramatic art, and those other sorts of youthful energy, invention and curiosity.

Like a child, the race of man was at play with 'the new-found isle,' the printing press, the new religion, and other manifestations of the age. If, as G. Stanley Hall says, 'genius only edits the inspiration of the crowd,' this age exemplifies the saying most remarkably, for there seemed to be an undercurrent of genius everywhere. It is worth noting, also, that the age was ushered in by the birth in 1552 of Spenser, who was 'the pleasing son of fancy,' and draws to a close with Locke, who sought to have learning made pleasant to children. Taken altogether, this period offers not a little evidence that not only is genius akin to childhood, but in its ways and means also similar to the latter. The precocity of child-learning at this epoch, also, even in classic studies, is another fact which goes to show that it was a period eminently suited to give the innate genius of childhood a fair opportunity. The precocity of childhood and genius seem at this period of the race's history to be correlated, a correlation favoured by the development of social institutions, new inventions like the printing press, new ventures like the seafaring of the fifteenth and sixteenth centuries, new religious movements, and the stir of new politics.

Andrew Lang, in his very brief discussion of 'Genius in Children' (346, p. 37), seems to take a very favourable view of precocity, recognising the fact that certain things (mental inner vision, *e.g.*, the capacity for doing things without taking pains, very common in children as compared with the ordinary adult) belong also to genius. Here again it is the

retention of the genius of childhood that makes the adult genius. Lombroso (364, p. 15) also holds that the typical 'man of genius' is precocious, considering, however, this precocity 'morbid and atavistic, being observed among all savages,' and 'often among children of the insane,' although, on the other hand, he admits that 'many children who become great men have been regarded at school as bad, wild, or silly; but their intelligence appeared as soon as the occasion offered, or when they found the true path of their genius.' Many instances of both kinds are given. Emerson may be taken as a fair example of precocity in childhood, Lowell, perhaps, to illustrate the opposite—both men of genius, both New Englanders. There is evidently, as Lang seems to hold, genius that is of necessity very precocious, and genius that may or may not be thus constituted at the start. We must also distinguish between the judgment of teachers as to the precocity of the child-genius and true precocity—many geniuses, as De Candolle has shown for France especially, have had very mediocre instructors; and Galton, for English men of science, showed that the geniuses among them 'were not made by much or regular teaching.'

Precocity of Genius.—Sully, in his study of 'genius and precocity,' concludes that 'genius is precocious in the sense of manifesting itself early,' and inclines to the view that an 'early manifestation of genius is not incompatible with a prolonged, and even late development,' agreeing somewhat with Galton's opinion (230, p. 44) that eminent men surpass ordinary men not only in superiority from the first, but also in a more prolonged development. There is, then, as in the race and individual, in the genius a prolongation of infancy. Children are precocious as children, true genius is precocious as genius. Not every precocious child is a genius when adult, for clever children are killed off or repressed by circumstances of environments, incidents of development, defects of character, neglect of parents or teachers, etc., but the real genius is precociously equipped at the start, and a favourable environment establishes and sets in relief his superiority. Donaldson (170, p. 354) has compiled from Sully's data respecting 287 distinguished men, a table [somewhat modified here], which sets forth clearly the precocity of genius:—

Class of Genius.	No. of Individuals.	Gave Distinct Signs of Promise before 20.	Produced Work before 30.	Attained Fame or Distinction before 40.	Notable Exceptions to Precocious Genius and Fame.
		p.c.	p.c.	p.c.	
Musicians .	40	95	100	100	Gluck, Wagner, (not original till middle life); Bach, Haydn (late in fame).
Painters and Sculptors.	58	89	98	100	Ghirlandajo, Francia; Wren (was distinguished in science, however, before 30).
Scholars . .	36	83	71	90	...
Poets . . .	52	75	92	92	Camöens, Racine, Goldsmith, Dryden, Dante, Cowper—all late in fame.
Scientists .	36	75	80	92	Franklin; Harvey and Darwin late in publication.
Novelists .	28	75	56	80	Defoe, Richardson, Sterne, Cervantes—late in production and fame.
Philosophers	37	67	56	60	Descartes, Hobbes, Locke, Leibnitz, Kant (but dabbled with other things).
Totals .	287	80	80	84	...

Musical talent is so precocious that only in about 6 per cent. of cases was there 'reason to conclude that there was no marked manifestation of ability in childhood'; of painters, sculptors and architects three-fourths, at least, 'are credited with having shown a decided skill before the age of fifteen'; so also with three out of every four poets, and nearly the same proportion of novelists; of five-sixths of the scholars, historians and critics, three-fourths of the men of science, and two-thirds of the philosophers a precocious childhood may safely be predicted. Interesting for comparison with Sully's statistics are the results of the investigations of Miss Caroline Miles (426, p. 552), who found that of 100 Wellesley College women, 66 had 'expressed themselves in some art form [verse, stories, painting, music, drawing] before eighteen years of age.' The precocity of ordinary childhood is often very marked here. Another contribution to the argument for the

precocity of genius is furnished by the statistics of Dr E. G. Lancaster (345), although averages are not very satisfactory. The following table, compiled from Dr Lancaster's data, shows the chief facts :—

Department.	No. of Individuals.	Average Age at which Rare Talent was shown.	Range of Years.	Additional Remarks.	Notes.
Actors . . .	100	18 (first great success).	6-28	90 per cent. famous before 22.	Few of real American stock.
Novelists (mostly American)	100	31.6 (publication of first novel).	12-51	4 per cent. wrote 'acceptably' at 22.	..
Poets	53	18.1 (first publication).	9-50	All wrote earlier than 18.	Publication often late.
Inventors . .	50	33.8 (first patent).	18-55	Patents improve with age.	..
Musicians (mostly European)	100	9.92.	9-20	95 per cent. showed rare talent before 16.	Only 50 per cent. had musical parents.
Professional men (American, law, medicine and theology) . .	100	24.11 (graduation from professional school), recognised success 35.	..	Only 8 per cent. began professional work before 21.	Age of recognised success about 35.
Artists (mostly American) .	53	17.2.	6-30	90 per cent. showed talent by 20.	50 per cent. showed their talent between 10 and 23.
Missionaries .	50	22.2 (departure for field of service).	..	..	..
Pioneers (American). . . .	50	17.6 (leaving for west).	10-26	..	Represents spirit of adventure 60 years ago.
Scientists . .	118	18.9 (date of 'life interest').	10-30	..	Age in column 3 somewhat too old.

Lancaster's paper is devoted to adolescence, and it is quite probable that larger series of statistics would emphasise more the precocious phenomena of childhood. Emotional genius (actors, poets, artists, etc.) is by him made later than it really is in its precocious development, while intellectual genius is

even more belated. Donaldson (170, p. 355), who cites Sully's data, arrives at the general conclusion that 'precocity and genius go together,' which seems still the safe ground to take, for the exceptions (outside the pathological and the abnormal) gradually disappear, or are accounted for by environmental causes, when careful examination has been made of all details of information.

The Normality of Genius.—That genius is a neurosis, a malady, something pathological or abnormal *per se*, a species of degeneration of body sometimes, and sometimes of mind, or of both together, an old-time guess of the classic philosophers, which Lombroso and his disciples have sought to establish as a scientific theory, is a view that of late has been weakened rather than strengthened by the study of childhood. In so far as the genius is a child he is certainly not degenerate, but all the more removed from it, as childhood is. Precocity, it may be said, is normal among children, and genius may be held to be normal also in adults; its rarity is the result of bad heredity and unfavourable environment, as also are the accidents and incidents of disease and degeneration which are made so much of by Lombroso in his remarkable study of the *Man of Genius* (364, p. 359). Childhood is nature's best effort to begin the individual existence, genius her best attempt to perfect manhood. That while many are called, few are chosen, is for the present, and not for all time. The more we learn about the normality of the phenomena of childhood, the less inclined shall we be to doubt the normality of genius. Genius has suffered not a little, as Mr Yoder (691, p. 146) notes, from 'the tendency to contrast mental greatness with physical weakness,' and parents, nurses and friends have combined to exaggerate the pains and frailties of their early and even their later life—some going so far as to set up ill-health *per se* as the maker of great minds. 'Natural, healthy development,' Mr Yoder points out, is shown by very many of the great men of the present century (Tennyson, Lincoln, Lowell, Beecher, etc.), and its entire consistency with the best development of mind is becoming more and more apparent. Childhood has profited, in general, much more by the improved environment of to-day than has genius in special; the latter still waits for that sanitation and improvement of society which shall make it lay claim to all its own.

Genius in the Individual and in the Race.—There is, too, some correspondence between the precocity of the individual and the precocity of the race. This appears in the early development of art, poetry, etc. 'The artistic impulse,' says Sully (621, p. 602), 'which, according to our tables, shows itself to be most precocious, appears also to be the one first manifesting itself in a decided form in the history of the average individual and of the race. The child and the race alike develop a crude art before they take seriously to inquiry. How far this consilience extends to the relative position of the several classes in our scheme I will not now venture to say.' Wallaschek's study of *Primitive Music;* Haddon's *Evolution in Art;* Letourneau's *Literary Evolution;* Mason's *Origins of Invention*, and other recent works of like sort, contain abundant evidence as to the precocity of primitive races in the faculties under discussion. But much more detailed investigation is necessary before dogmatism is justifiable. 'Recognition of the operations of Nature,' says Professor Mason (411, p. 22), 'constitutes the genius of invention. The Australian, or humble people just like him, commenced this wonderful process. Those "cunning little creatures," as Emerson called them, invented the boomerang. And there is not a patent-office in the world that would refuse to grant them letters for the exclusive use thereof for seventeen years.' Equally precocious in the race is the art of the Eskimo and the people of the river-drift in France, the poetry of the Hottentots (even Strabo thought the first human speech was poetry), and the philosophy of the Zuñi Indians, while the dramatic instinct is revealed in all parts of the world in the ritualisation of myths among primitive peoples, and precocity of scholarship is abundantly present among the negro tribes of Africa and certain American Indians where polyglot speakers and historians are very common. Anaximander and Darwin have had their aboriginal predecessors, and the sacred books of India and China have anticipated more than one doctrine of the present day. One need not hold that the human race is a 'sport,' as Dr D. G. Brinton suggests, or that genius is a sport, but simply that the earlier races of man, the individual in his childhood, and the adult genius, have been rather underrated than not.

Heredity and Environment.—Dr Robert Fletcher, in an

interesting discussion of the question, 'The Poet: is he born, not made?'—a question first raised by one Florus, a Latin epigrammatist, of whose writings only a few fragments survive, one of which Ben Jonson uses in his play, *Every Man in His Humour*—'They are not born every year, as an alderman. There goes more to the making of a good poet than a sheriff,' comes to the conclusion that 'the poet is born and made.' (215, p. 135). This is about the view of Ben Jonson himself, who, in his celebrated eulogy of 'gentle Shakespeare,' declares, 'for a good poet's made as well as born.' And we may extend this thought, with proper qualification, to all the manifestations of genius in the individual, and in the race, in all ages, and among all peoples. Genius might well bear on its shield the motto of the Austrian Order of the Iron Crown —*auita et aucta*, 'inherited and increased.'

The foregoing facts and arguments, while they may not justify the declaration of Kiefer (326, p. 58) that 'all children are actually intellectually equal,' do, nevertheless, go far to vindicate such statements as that of Baldwin (23, p. 38): 'It is perfectly certain that two in every three children are irretrievably damaged or hindered in their mental or moral development in the schools; but I am not sure that they would fare better if they stayed at home.' To accommodate the environment to the child, and to let the school supplement and stimulate the best efforts of nature, is the problem here.

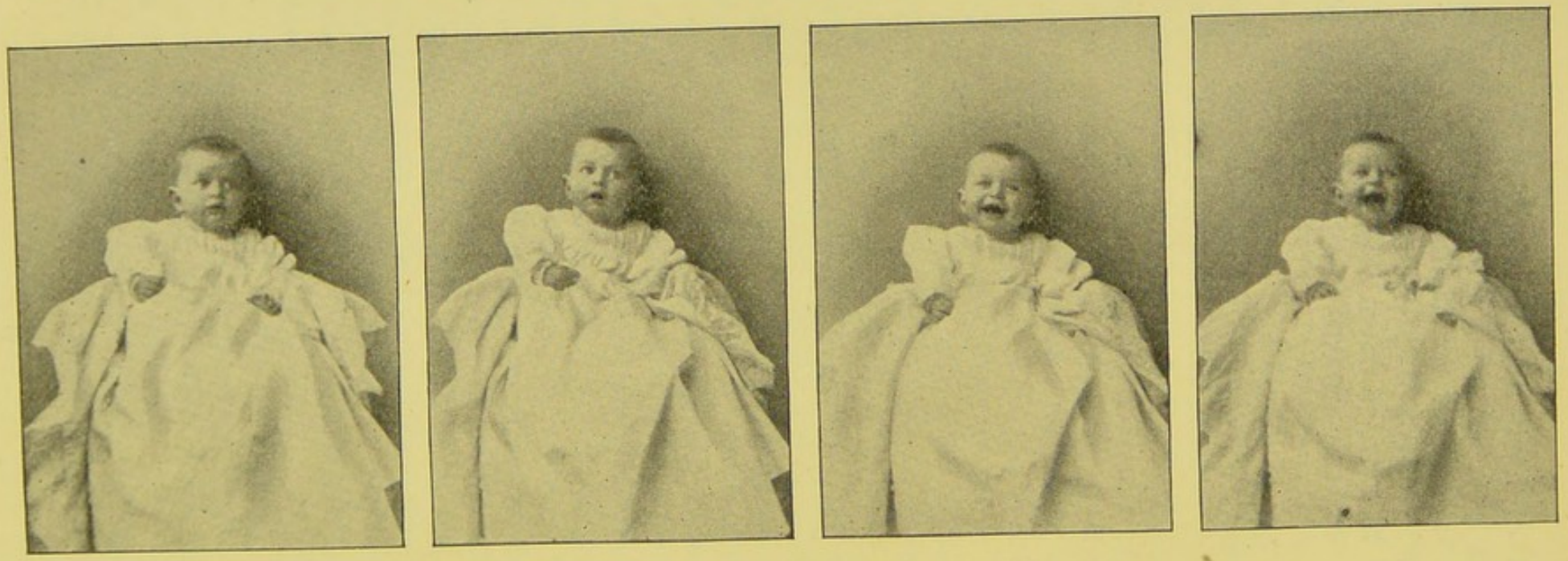
Very interesting in this connection are the experiments reported by Dr E. H. Lindley in his 'Study of Puzzles,' a valuable contribution to the psychological literature of plays and games. According to Dr Lindley (360, p. 480), the 'so-called plasticity of childhood' does not necessarily signify 'resource, initiation, promptness of adaptation of the new,' but rather that children are, *par excellence*, 'imitative beings, and hence can quickly learn new ways of doing.' Dr Lindley puts this view of the matter well, when he says: 'Every normal child may indeed be a "genius," but not of the inventive and creative sort. Just as recent researches indicate that he is less inventive in language than was formerly thought, so in other phases of activity, less and less is being credited to his initiative, and more to imitation. This does not degrade the mental status of children, but rather dignifies imitation as the

great means by which the mind gets experience. Inventiveness is a plant of slow growth. Protected as he is from the bewildering complexity of environment, the child only slowly gains the wide variety of experiences which favours creative activity, and which makes for the higher adaptability that is necessary for adult life.' The author, however, magnifies too much, perhaps, the difference between 'imitative' and 'inventive' or 'creative' genius, crediting childhood with too little of the latter, and forgetting that it is imitation of adults that really lowers the tone and the power of child-genius.

It would seem that, for young individuals, as for young races, the way is much the same, the fundamental factors in education, as in civilisation, being, outside of the intellectual capacity, opportunity, suitable *milieu*, sustained interest. To the historical incident, so powerful in leading races up to the heights of civilisation, may be said to correspond the personal incident so influential with the child. Dr Boas (60, p. 10) has remarked: 'Historical events appear to have been much more potent in leading races to civilisation than their faculty, and it follows that achievements of races do not warrant us to assume that one race is more highly gifted than the other.' Something similar might be said for the children of all the races of men. Judged from a purely intellectual point of view, children, like races, may not differ so greatly from one another after all, though circumstances, surroundings, events, uncontrollable influences and unfavourable environments often drive them far apart. The sporadic occurrence of genius, not always explainable by the laws of heredity, the sudden bursting forth of talent (in advanced years even) where none was looked for, the constantly increasing appreciation of childhood since 'child-study' has revealed its deeper wisdom and its inexhaustible variety—these and many other things seem to speak for the essential genius of childhood everywhere. Nor must it be forgotten that when we have the child in the presence of matters not the product of our civilisation so much as the outcome of universally human needs and requirements, the beginnings of the graces and the arts of all humanity, we get some glimpse of a real genius that belongs to him as a child, apart from that of mere intellect. And it is so, too, with primitive races. Anatomical, physiological, psychological differences exist between races and between individuals, but are they in all

normal cases of such a character that we are justified in declaring that, *ab initio*, race A or individual A was superior intellectually to race B or individual B under the same favourable environment and stimuli? It would seem as if our range of knowledge must be far wider and more profound before we can venture to take up the challenge of the poet:—

> 'Who can declare for what high cause
> This Darling of the Gods was born?'



PERIODS IN THE DEVELOPMENT OF A LAUGH.
(From Photograph in possession of Dr G. Stanley Hall.)

CHAPTER IV

THE PERIODS OF CHILDHOOD

Theory of Recapitulation. — Professor A. Milnes Marshall, in his address before the Biological Section of the British Association for the Advancement of Science, at Leeds in 1890, on the 'Development of Animals' (407, p. 827), discussing the implications of the doctrine of descent, points out that 'The study of Development, in its turn, has revealed to us that each animal bears the mark of its ancestry, and is compelled to discover its parentage in its own development; that the phases through which an animal passes in its progress from the egg to the adult are no accidental freaks, no mere matters of developmental convenience, but represent more or less closely, in more or less modified manner, the successive ancestral stages through which the present condition has been acquired. Evolution tells us that each animal has had a pedigree in the past. Embryology reveals to us this ancestry, because every animal in its own development repeats this history, climbs up its own genealogical tree. Such is the Recapitulation Theory hinted at by Agassiz, and suggested more directly in the writings of von Baer, but first clearly enunciated by Fritz Müller, and since elaborated by many, notably by Balfour and Haeckel.' All this is summed up in the statement that ontogeny repeats phylogeny, the individual the race. Professor Marshall notes that 'recapitulation is not seen in all forms of development, but only in sexual development; or, at least, only in development from the egg. In the several forms of asexual development, of which budding is the most frequent and most familiar, there is no repetition of ancestral phases; neither is there, in cases of regeneration of lost parts, such as the tentacle of a snail, the arm of a star-fish, or the tail of a lizard; in such

regeneration it is not a larval tentacle or arm or tail that is produced, but an adult one.' The study of the development of individual animals and species of animals discloses to us also 'a series of ingenious, determined, varied, but more or less unsuccessful efforts to escape from the necessity of recapitulating, and to substitute for the ancestral process a more direct method.' This view that the individual more or less distinctly repeats at least the chief stages in the development of the race, both mentally and physically, has been accepted as the cardinal doctrine of the newer theories of education which in the form of 'child-study' have made their influence felt in America and in the Old World.

Some Limitations of the Theory.—It is possible, however, to exaggerate both the *rôle* and the significance of recapitulation in biology, and Professor L. C. Miall, in his 'Address to the Zoological Section' of the British Association at Toronto, in August 1897, thinks Professor Marshall has done this, when he declares that 'the proof of the theory depends chiefly on its universal applicability to all animals, whether high or low, in the zoological scale, and to all their parts and organs.' The study of the development of creatures below the mammal has by no means given us an abundance of light upon the subject. According to Professor Miall (425, p. 16):—'The development of a mammal, for instance, brings to light what I take to be clear proof of a piscine stage; but the stage or stages immediately previous can only be vaguely described as vertebrate, and when we go back further still all resemblance to particular adult animals is lost.' There is some truth in Professor Miall's commonplace comparison, when he remarks that the thoroughgoing recapitulationist 'has picked out all the big strawberries and put them at the top of the basket.' Miall himself, while he admits no sort of necessity for the recapitulation of the events of the phylogeny in the development of the individuals, believes, nevertheless, that 'certain facts in the development of animals have an historical significance, and cannot be explained by mere adaptation to present circumstances; further, that adaptations tend to be inherited at corresponding phases, both in the ontogeny and the phylogeny.'

Some of the limitations of the 'Recapitulation' theory are also discussed by Professor J. Mark Baldwin, who emphasises the *rôle* of habit and accommodation, with their inevitable

'short-cuts,' and the lengthening of human infancy (23, p. 20).

As Professor C. S. Minot points out in his study of 'Heredity and Rejuvenation' (428, p. 578), the primitive form of the ontogenetic development of the young is represented by the larva (as in sponges, cœlenterates, echinoderms, worms), and not by the embryo, whose appearance is much later in the scale of life. The great difference between the two lies in the fact that the larvæ 'live a free life and have to nourish themselves,' while the embryos 'have no free life, and are fed by the yolk collected in the egg.' Embryonic development, therefore, was dependent upon the yolk, which 'has arisen very gradually,' and only after the great increase in size of the yolk among the higher animals could real embryonic development be said to exist—larval development passing gradually into embryonic with the growth in size of the yolk. Embryonic development, with the coming of the social *milieu*, a 'second mother' to the child, passes into prolonged infancy, and the social protection and feeding of the young child necessarily exert considerable influence upon the way in which, as he grows up, he repeats, particularly, the mental development of the race. However great have been the disturbing factors in the pre-natal existence, wherein physical and animal life-history is more or less recapitulated, the elements which enter into the disturbance of the post-natal recapitulation are even greater. The environment, in the latter case, is of an entirely different sort, and its *modi operandi* are also of a new and diverse nature.

This prolongation of the psychic infancy and childhood of the individual, so marked among the civilised races of the present, does not characterise the primitive peoples in like manner. Among the Athka Aleuts, 'the boy is an independent hunter at ten and may marry'; the boy of the Bismarck Archipelago, who goes out with his father very early, 'knows as much as he does by his tenth or twelfth year'; in Tahiti the ease with which food can be obtained allows children to become practically free from parental control, and 'by their eighth year to set up a sort of group-life by themselves'; among the Khevsurs of the Caucasus children early learn to fight, and 'by their eighth or tenth year may and do speak their word in public' (613, II. p. 216); and many more examples from all over the world might be

cited. This fact has been held to justify, though it clearly cannot do so altogether, the view of those who maintain 'that the play-period [in the individual] as such is largely the result of civilisation, and that it has therefore no counterpart in race development,' for in the development of the race as a whole 'no play-period, such as is characteristic of the child, is found, and even in the individual child, among primitive people, the play-period is far less marked than in civilisation' (659, p. 386). It has been suggested also that the 'period of adolescence,' with the 'marked emotional and pathological characteristics that so often accompany it,' is also, in part, 'the result of civilisation' (659, p. 386). The writers who take this view seem to make too much of 'the fact that imitation, which plays so important a part in the development of the child, could not act in the development of the peoples who worked out their own advancement independently,' of the 'use of a ready-made language and the entrance by means of it into an inherited experience,' as it were, and of the fact to which Lange (347) and Dr Lukens have called attention (380) that 'the child is surrounded by culture-material of a much higher grade than that which he himself could produce, and that, in consequence, the receptive, sensory side of his nature is stimulated, while the productive, motor side is as yet undeveloped,' whereas in race-development 'productive activity has developed hand in hand with the sensory.' This, however, is by no means altogether true, and it is certainly hazardous to declare that 'the kind of play activity which is peculiar to the individual in his immature stage has no place in race development' (659, p. 387). Nor is it any truer that 'as far as play activity has been found in the race it is of a different character, the result of exuberance of motor ability over and above what is necessary for the support of life.' For, just as individuals are children and youth because they must play, before being competent to use and control the activities of adult life, so nations which are to be civilised must be savage and barbarous in order to use rightly the ways and means of culture and enlightenment. There is in savagery and barbarism more of the play which is akin to that of childhood than is commonly believed, and the parallel between the child and the race is scarcely any the worse off here than elsewhere.

Parallel Growth of the Individual and the Race. — The

theory of a certain parallelism in the growth of the individual and in that of the race is by no means new, and seems early to have obtained wide currency in certain educational theories of a more or less philosophical sort. Dr E. von Sallwürk credits Rousseau with having been the first to propose the education of man according to the general evolution of the human race, both in his discourse on 'The Origin and Foundations of Inequality among Men,' and in his *Émile*, where 'we find the *genetic* principle recognised' (562, p. 13).

Lessing, in his *Education of the Human Race*, the gist of which is contained in the epigrammatic statement, 'education is revelation coming to the individual man, and revelation is education which has come, and is yet coming, to the human race,' spoke also of the parallelism in question, in these words: 'The very same way by which the race reaches its perfection, must every individual man—one sooner, another later—have travelled over.'

Herder, the great German poet and historic philosopher, who was influenced more or less by Rousseau, compared the life of the race with the life of the individual, for humanity itself, in his conception, lived, felt and moved largely as did each particular man, played upon and interplayed around and about with the environment of nature, through which ran from stone to man one connected thread of being. The Orient represented the infancy of mankind, Egypt and Phœnicia its boyhood, Greece its youth, Rome its manhood, Christianity its old age.

Goethe also had the idea of the parallelism of the growth of the individual and the race (562, p. 18), as the following passage from his conversations with Eckerman shows: 'Youth must always begin from before, and as an individual pass through the epochs of world-culture.'

Home, the Scottish philosopher, in his *Sketches of the History of Man*, the second edition of which appeared in 1778, writes: 'A progress from infancy to maturity in the mind of man, similar to that in his body, has often been mentioned' (305, III. p. 217), and, again: 'The savage state is the infancy of a nation' (IV. p. 128). Shelley, in his *Defence of Poetry*, declares that 'the savage is to age what the child is to years,' and utterances of a like sort are found in not a few of the poets and philosophers of the beginning of the century.

Hegel, according to Professor Luqueer (382, p. 112), preceded Comte, to whom Herbert Spencer attributes the enunciation of the doctrine, in declaring that 'the education of the child must accord both in mode and arrangement with the education of mankind as considered historically; or, in other words, the genesis of knowledge in the individual must follow the same course as the genesis of knowledge in the race.' Hegel's own words are: 'The individual must traverse the stages of culture already traversed by the universal spirit. Doing this he must yet be aware that the spirit has outgrown these older forms. He must pass through them as over a well-travelled and even way. Thus we see knowledge, which in early times taxed the maturest minds of men, now become the property, or means for exercise and even play, of children.'

Culture-Epoch Theory.—The 'culture-epoch' theory of the Herbartians is one development of this view of the parallelism of the history of the individual and of the race to which he belongs, with which has been associated the correspondence of the ages of savagery, barbarism and civilisation in the individual and in the race. Some of the best arguments pro and con may be read in detail in Lange's discussion of 'Apperception' (347, p. 115) and Capesius's suggestive essay on 'Collective Development and Individual Development.' Lange points out that the child of to-day comes into contact, in the various social classes by which he is surrounded, with almost every epoch of the past history of his race, so complex is modern civilisation; Dr Stockner remarks that there is no absolutely continual ascent in development — 'it has its mountains and valleys.' Dr Lange again styles the 'culture-epoch' theory 'a child of necessity,' and declares that to-day 'there is no need for the child to lead a nomad life, for the child is now a bearer of culture, not the adult of ages past, and to him may well be applied, 'What you have inherited from your fathers, acquire it in order to possess it.'

Miss Nina C. Vandewalker, in her discussion of 'The Culture-Epoch Theory from an Anthropological Standpoint,' criticising the Herbartian 'culture-epoch' theory, justly remarks that 'in considering race-development the fact is often overlooked that such development has not been homogeneous and uniform, and that progress from cultural infancy to the maturity of civilisation cannot be traced in any one

people . . . hence, at any historic period, people could be found in any or all of these stages, with infinite gradations between them' (659, p. 382). The North American Indians, for instance, at their discovery, represented practically all grades below that of the high civilisations of Europe and Asia, except that the lack of domesticated animals caused some noteworthy departures from the old-world developmental gradations.

Morgan's Views.—Many writers, however, following in the steps of Lewis H. Morgan, the American ethnologist, whose work on *Ancient Society* was published in 1878, have, with due consideration, accepted his scheme of the development of mankind through savagery and barbarism to civilisation, and correlated it with the theory of the parallelism of the evolution of culture in the individual and the race, although it is evident that strict adhesion to Morgan's epochs can no longer be insisted upon; the recent discoveries and researches of ethnology and anthropology have gone far beyond the outlook of his time. The six periods, which, according to Morgan, preceded the coming civilisation—some 5000 years ago—heralded by the invention of writing and the evolution of urban life, are seen in the table on p. 58 (compiled from his data), with the chief characteristics of each.

Recent discoveries in Egypt and the Babylonian region have, of course, made the period of 5000 years, which Morgan assigned to civilisation, absurdly low, and ethnological studies all over the world have demonstrated the great relativity of the epochs and periods assumed by him, though enough truth remains in them to be very suggestive in education.

Professor Woods Hutchinson's Periods of Childhood.—Professor Woods Hutchinson (312, p. 220), from the consideration of anthropological data, and the observation of the growth of the child-mind, comes to the conclusion that, for the alleged parallel between the development of the individual and that of the race, there is 'a sound physical basis, although no hard-and-fast lines can be drawn between the successive stages,' and adopts the different methods of food-getting as 'the basis for division into stages, least open to objection and most uniform in its results.' Dr Hutchinson makes out five stages, which, with their chief characteristics, are given in the table on p. 59, modified from that of the author, and containing the gist of his whole paper.

No.	Periods.	Length of Period.	Began with	Ended with	Other Characteristics.	Greatest Arts or Inventions.
1.	Older Period of Savagery	60,000 years	Natural subsistence upon fruits, herbs, roots, nuts, etc.	Acquisition of fish diet and use of fire	Restricted habitat	Language
2.	Middle Period of Savagery		Fish diet and use of fire	Invention of bow and arrow	Migration (aided by use of fire)	Fire; food variety
3.	Later Period of Savagery		Bow and arrow	Invention of art of pottery	Sex - influence (man hunter, woman maker)	Mythology
4.	Older Period of Barbarism	20,000 years	Pottery	Cultivation of plants(America), domestication of animals (Eastern world)	Village life	Household arts and inventions
5.	Middle Period of Barbarism	15,000 years	Cultivation of plants (America), domestication of animals (Eastern world)	Invention of process of smelting iron, use of iron tools	Beginnings of national life; feuds, wars; animal diet	Institutions; agriculture, ; pastoral arts
6.	Later Period of Barbarism		Smelting of iron, use of iron tools	Invention of phonetic alphabet, writing	Arts of wars; city life	Literature

No.	Stage.	Duration of Period.	Height of Period.	Prominent Characteristics of Period.	Plays and Games indulged in.
1.	'Root and Grub'	Birth to 5 years	third year	mouth as criterion of everything; things are 'nice' or 'nasty'	biting and tasting plays
2.	Hunting and Capture	4-12	seventh year	fear of strangers; stalking methods; indifference to pain; hero-worship; cruelty	'Bo-Peep' (stealth, stalking; approach, ambush, surprise); 'Hide and Seek,' 'Black Man,' 'Prisoner's Base' (pursuit, attack; mimic sieges, assaults, wars); 'gangs'
3.	Pastoral	9-14	tenth year	fondness for pets; desire to have 'something of his own'	keeping and feeding pets; building huts; digging caves
4.	Agricultural	12-16	twelfth year	development of foresight; passion for gardening	gardening; digging up seeds 'to see if they're growing'; watching weather signs
5.	Shop and Commercial	14-40	eighteenth-twentieth year	bulging pockets; demanding pay for services; recognition of value and 'sense' of arithmetic	'swapping,' selling, trading, exchanging, bargaining

Dr Hutchinson looks forward to the arrangement of the school curriculum upon these or very similar lines, observing that 'if the sacred multiplication table were reserved until this stage (the fifth, when the first real recognition of the value and

"sense" of arithmetic appears), it would be keenly enjoyed instead of hated as a "grind," and mastered in no time.'

Powell's Stages and their Characteristics.—Major J. W. Powell (505, p. 121), in his studies of the development of human society, recognises 'three grand stages, savagery, barbarism, civilisation,' with a dawning fourth, enlightenment. For comparison with more or less corresponding stages in the life of the individual, the following table, constructed from the data in Major Powell's essay, may be of interest:—

	Savagery.	Barbarism.	Civilisation.
Artefacts	age of stone	age of clay	age of iron
Navigation	canoe (paddle)	boat (oars)	ship (sails)
Music	rhythm	rhythm and melody	rhythm, melody, and harmony
Society	kinship clan	kinship tribes	age of nations
Society	maternal kinship most sacred	paternal kinship most sacred	territorial boundaries most sacred
Law designed	to secure peace	to secure peace and authority	to secure peace, authority and justice
Law extends to	kindred only	kindred and retainers	all the people of the nation
Language	age of sentence-words	age of phrase-words	age of idea-words
Writing	picture-writings	hieroglyphs	alphabets
Grammar	no verb 'to be'	no verb 'to read'	parts of speech
Religion	beast polytheism	nature polytheism	monotheism
Powers of nature are	feared as evil demons	worshipped as gods	apprenticed servants
Wolf is	oracular god	howling beast	connecting link in systematic zoology
Mathematics	count only	arithmetic	geometry
Vision is limited by	opinion	horizon	powers of telescope and microscope
Reason is based on	zoomorphic analogies	anthropomorphic analogies	intrinsic homologies
Greatest intellectual discovery	difference between animate and inanimate, organic and inorganic, living and dead	limited powers of animals	physical explanation of powers and wonders of the universe; intellectual superiority of man
Deification	beasts are gods	gods are men	men are *as gods*, knowing good from evil

In his study of the development of 'the human activities which are designed to give pleasure,' Powell (508, p. 21) recognises four stages of culture through which the races of men have passed, or are now passing, viz., the hunter stage, the shepherd stage, the tyrant (or monarchical) stage, and the freedom (representative government, science) stage. The corresponding evolution of the various æsthetic arts, in these diverse periods, is indicated in the following table, based upon Powell's paper:—

Art.	Hunter Stage.	Shepherd Stage.	Monarchical Stage.	Freedom Stage.
Music . .	rhythm	melody	harmony	symphony
Graphic Art	sculpture	relief	perspective	chiaro-oscuro
Drama . .	dance	sacrifice	ceremony	histrionic art
Romance .	beast fable	power myth	necromancy	novel
Poetry . .	personification	similitude	allegory	trope

Some parallelism exists here, also, between the development of the individual and that of the race, although the comparisons are often hazardous. One of the best of the more recent attempts to classify the races of men upon a culture basis is made by Grosse, in his very interesting and suggestive monograph on the family and the early social economy of mankind. Without any rigidity, the following groups, according to Grosse, represent, in general fashion, the course of human history: (1) Lower hunters; (2) higher hunters; (3) pastoral; (4) lower agriculturalists; (5) higher agriculturalists. Such a classification, however, is not evolutionary in the strict sense of the term, for all peoples have not passed through the same stages, while there is a considerable difference often between two peoples in the same stage of culture.

Bos on the Culture-Epoch Theory.—The earlier writers of the last quarter of a century who discussed the development of human culture, it will be seen, agree in recognising above the first and most primitive epoch of the race's existence, three successive stages or periods characterised by hunting, the domestication of animals, and agriculture respectively, and with this theory usually went the corollary that every people must of necessity pass through these epochs, in the order named, on their road to culture and civilisation. Even so

recent an authority as G. de Mortillet, in his *History of Hunting, Fishing and Agriculture*, seems to hold to this view. Some few writers, however, like Schurtz, Petri and Grosse, have expressed more or less doubt as to the validity of these epochs, and put forward the view that, as the natural result of environment or of racial proclivities, hunting, the domestication of animals and agriculture, have often been of independent and by no means successive development. The latest argument upon the subject is the essay of Bos (67), who, for the first time, points out the real condition of these arts and avocations among the most primitive races of the globe (the Veddahs of Ceylon and some of the Indian tribes of Brazil, *e.g.*), and their relation to social status and environment, especially as to the sexual incident of the distribution of labour, and the complexities which have resulted from the play of the two most important factors of all human development—the hunger-impulse, which tends to the preservation of the individual, and the love-impulse, which makes for the preservation of the species. According to Bos, there are many facts which speak against the recognition of the three 'epochs' under consideration as 'stages of culture.' Many animals have the hunting instinct well developed, as others have the storing impulse. We are prone to think of agriculture as necessarily connected with (and subsequent to) the domestication of animals, while, as a matter of fact, we find certain forms of agriculture attaining a comparatively high development among the North American Indians, the Pacific Islanders and other more or less savage or barbarous peoples, without the assistance of any domesticated animal whatever. Nor can it be said that all agricultural peoples are higher than all hunting peoples in the scale of culture, for leisure for art and social institutions of a nature suited to their environment have more than once elevated the latter above the former. Some of the Indian tribes of Brazil, according to Karl von den Steinen, are, in a sense, good agriculturists, without possessing more than a menagerie of tame (not domesticated or utilised) beasts and birds; they might, perhaps, be compared to children with their captive pets and their garden-plots, without the artificialities springing from adult environment. The result of the investigations of the economic life of primitive peoples, as we now have them at least, shows that no people is absolutely confined to one business or occupation

during any stage of 'culture'; that industry is often younger than agriculture, and agriculture often earlier than hunting and fishing; the beginnings of them all really being present in the remotest periods of human history, ready to be developed by the touch of environment or necessity, the mighty influence of surrounding nature upon the arts of man, or those impulses within him which lead him to do the thing necessary for life and pleasure with the least expenditure of energy. That agriculture should naturally appear alongside hunting in one and the same tribe at one and the same time (as among certain Indian tribes of Brazil) is really the result of sex-adjustments and not an evidence of retrogression and degeneracy, for here man is the hunter, woman the tiller of the soil, and the economic life of each has a certain autonomy of development which repeats itself again and again in the history of the highest civilised races. Out of this duality, Bos believes there arose the unity of the family. The fact noted by von den Steinen (67, p. 209) that in certain Indian tribes the men roast their food (largely flesh and fish), while the women boil theirs (largely vegetable), is paralleled in other parts of the world as well; and the *chef* of the modern hotel or millionaire's palace shows that the art is not extinct in the male half of the race at this late day, while woman's vegetarian predilections, and her historical skill in the use of herbs and plant-poisons, are the proof that she also has not forgotten the early lessons of her sex. And Professor O. T. Mason has recently shown how much agriculture among primitive peoples is the art of woman, and how its methods and its implements are largely her ideas and her inventions. Bos's general conclusion is that just as we cannot exactly identify or make the same in every respect the same thing when done by two different individuals, so, with the economic forms and methods of the race, we must be careful not to identify them or make them exactly equivalent to stages of culture, for such they can be only in the most general interpretation, if at all. A better way, for the present at least, to classify human industries, thinks Bos, is as follows: (*a*) *Collectional industries* —gathering, picking up, etc., of plants, animals and minerals, from which the transition to hunting and fishing and some of the aspects of agriculture naturally takes place. (*b*) *Productive industries*—in which men assist nature in the production of natural products—holing and grubbing (and very primitive

horticulture), domestication of animals, agriculture (with the aid of the plough, the cow and the horse); forestry. (*c*) *Transformative industries*—arts and manufacturing industries, architecture, milk-industry, etc. (*d*) *Locomotion industries*—trade, commerce, etc. In all of these the influence of sex is often only second to that of environment, while in some cases it is even greater.

After the arguments adduced by Bos, it will be admitted how difficult the verification of the three culture-stages under discussion is in the life of the individual. Thoreau, who held that, 'even in civilised communities, the embryo man passes through the hunter stage of development,' wrote: 'There is a period in the history of the individual, as of the race, when the hunters are the "best men," as the Algonquins called them. We cannot but pity the boy who has never fired a gun; he is no more humane, while his education has been sadly neglected. This was my answer with respect to those youths who were bent on this pursuit, trusting that they would soon outgrow it' (638, p. 213). So, too, with fishing—for fishing and hunting, Thoreau tells us, are 'oftenest the young man's introduction to the forest [where of old dwelt his progenitors of the prime], and the most original part of himself.'

The 'collection-instinct,' so-called, characteristic of certain periods of childhood and youth, deserves study in the light of the researches of Bos and others and the studies of De Sanctis. Especially important is the relation of environment and opportunity to culture in connection with theories of 'culture-epochs.'

Social Types.—Some light is thrown upon the question of 'culture-epochs' and 'developmental stages' by Demolins in his study of the 'social types' of Southern and Central France, where the great *rôle* of the nature of the place, and of the labour in the formation of these 'types' is pointed out, although the author seems to emphasise too much the environmental factors of a more or less physical sort to the detriment of the historical, religious, moral and artistic. One 'social type' may be derived from pastoral art, another from the exploitation of fruit trees, a third from manufacture, a fourth from transportation and commerce, while the 'petite culture' and the 'grande culture' have each their peculiar 'types.' There are also varieties and sub-divisions of these 'social types.' The shepherd type of the Pyrenees and the Alps differs

from that of the calcareous plateaus of the Gévaudan and the Rouergue, and both of these from that of the volcanic region of the Auvergne; the Limousin and Périgord type of the chestnut and walnut region is not altogether one with the Provençal type of the olive region or with the Gascon-Armagnac type of the vine region; the 'social types' of the river valleys of the plateaus differ also in their several varieties. The social condition of Central and Southern France still feels the influence of pastoral communism, which has contributed so much to make the people live, as it were, on the family, their friends and neighbours, the clan, the State, unconsciously forming some of the worst developments of modern French politics.

In this connection also one may well read T. E. Cliffe Leslie's admirable article on 'Auvergne,' in which the culture-shaping powers of mountain and plain are placed in contrast. 'Greater differences of human life, motive and pursuit,' says this author, 'are to be found in parts of the province of Auvergne, a few miles from each other—in adjacent districts of mountain and plain, for example—than some which are often pointed to between Frenchmen and Englishmen as the consequences of an original difference of race' (354, p. 753).

As Dr W. J. McGee has pointed out:[1] 'In desert regions the tendency of common strife against a hard physical environment is towards the development of co-operation and interaction, which stimulate the altruism of civilisation.' This may have contributed to make not a few primitive peoples, living in very unfavourable environments, hospitable, social and altruistic to a degree much beyond what one might expect from the general character of their arts and institutions, and we see the same fact repeated, perhaps in the development of the same unselfish trait in children, subject to a like harsh and unfavourable *milieu*. Nature can come dangerously near sometimes to producing figs from thistles. It has been given to some peoples, as to some individuals, to simulate without the aid of the arts and institutions that have been at the disposal of others (moving with perfect order through the various stages of culture) some of the noblest virtues and best graces of human kind. A 'lodge in some vast wilderness' has more than once tamed a savage people, no less than a single savage human. Not 'self-help' alone, as Carlyle says, does the

[1] *Science*, Jan. 14, 1898, p. 54.

young Ishmael acquire in the destitution of the wild desert, but the higher and nobler other-help as well. The study of the effects of several environments upon the same race, and of one and the same environment upon different races, of change of environment, of painful and pleasurable environments, etc., has hardly yet been entered upon in the true anthropo-psychological sense.

Periods of Child Life.—Not only does the child seem to recapitulate physically and mentally the chief points of the race's history, but his own development is fairly teeming with epochs and periods, isolated spots sometimes, the interpretation of which is not yet at hand.

Ancient philosophy, modern folk-lore and the poetry of all ages have more or less to say concerning some of these 'periods of life,' but the great mass of them, many of which have only recently come to light since the study of the growing child has come to be so zealously pursued, yet await satisfactory explanations. The enumeration of some of these 'periods,' with some few words of comment, may not be without interest, since the subject is one which has not yet been discussed to any great extent, and most of the facts are new and of great value.

Pythagoras, the philosopher of Samos, who lived more than five centuries before the Christian era, used to delimit the various epochs in the life of man thus: Child, 1-20 years; young man, 20-40 years; man, 40-60 years; old man, 60-80 years; dead, 80 years and over. In the Lî Kî, the sacred book of the Chinese, we find the following ancient division (559, p. 65): 'When one is ten years old, we call him a boy; he goes (out) to school. When he is twenty, we call him a youth; he is capped. When he is thirty, we say "he is at his maturity"; he has a wife. When he is forty, we say "he is in his vigour"; he is employed in office. When he is fifty, we say "he is getting grey"; he can discharge all the duties of an officer. When he is sixty, we say "he is getting old"; he gives directions and instructions. When he is seventy, we say "he is old"; he delegates his duties to others. At eighty or ninety we say "he is very old." When he is seven, we say that he is an object of pitying love. Such a child and one who is very old, though they may be chargeable with crime, are not subject to punishment. At a hundred he is called a centenarian, and has to be fed.' Shakespeare, sociologically-minded, like the

old Chinese writer, has immortalised the 'seven ages' of man, which are his 'acts.'

In the popular literature of Germany in the sixteenth century, the following characterisation of the various epochs of woman's life is to be found (498, I. p. 300):—

X.	Years—	Child-nature.	LX.	Years—	Aged.
XX.	,,	Tender virgin.	LXX.	,,	Ugly.
XXX.	,,	Housewife.	LXXX.	,,	Waste and cold.
XL.	,,	Matron.	XC.	,,	Martyr.
L.	,,	Grandmother.	C.	,,	Dead.

The English folk-rhyme of the diverse ages of man occurs in Tusser's *Five Hundred Points of Good Husbandry*, published in 1557:—

> 'The first seven years, bring up as a child;
> The next to learning, for waxing too wild;
> The next, to keep under Sir Hobbard de Hoy;
> The next, a man, and no longer a boy.'

Here we have four periods of seven years each, with the attainment of manhood at the twenty-eighth year.

The Psychological 'Ages.'—Dr E. C. Sanford, of Clark University, Worcester, Mass., in the course of a lecture before the Summer School of 1899, suggested a scientific rearrangement of the 'Seven Ages' of Shakespeare, somewhat as follows: 1. *Birth to three years.* The age of physical adjustment, learning to talk and to walk; period of emotional fickleness and self-regardfulness. 2. *Three to fifteen years.* The age of social adjustment—the school age. During this period the physical development goes on towards completeness. The child begins to see the advantage of paying some attention to the rights of others, is less self-regardful, but reflective thought, persistency and will-quality are still weak. 3. *Fifteen to twenty-five years.* This period of youth is largely one of transition. Boyhood and girlhood are practically complete; there is rapid growth and strong vitality, and heredity makes itself felt. Great emotional changes take place at this epoch. It is the period of religion, hero-worship, ideals, dreams, romance, of the new sense of self and of others, of the craving for notice, sympathy, companionship, love. Human beings at this time begin to do right because they feel it is right. The bad and morbid aspects of this period are juvenile crime and the psychic disturbances of adolescence and the like.

4. *Twenty-five to forty years.* The age of action, of establishment in vocation, business, work. This is the period of young manhood, with all that that means. 5. *Forty to sixty-five years.* The beginning of the period of middle age sees quite a break with the previous age of young manhood, of which the main factors are mental. By middle age the man comes to recognise the impossibility of the fulfilment of the ambitions of his youth, and turns to his children for their realisation, or, if childless, turns to philanthropy, charity, etc. 6. *Sixty-five to seventy-five years.* This period of elderly life is, in people who have lived properly and not abused their body or their faculties, a period of considerable activity in lines similar to those of the previous period, or, in some cases, of scientific or business activity to a noteworthy degree. 7. *Seventy-five years and onwards.* Period in which the powers begin to break up and the end of life approaches.

The Australian 'Ages'; other Primitive Ideas.—Certain Central Australian tribes, whose ceremonies of childhood and manhood have been described by Professor Baldwin Spencer,[1] recognise the following periods of life, for which they possess special terms: 1. *Amba-querka*—mere child; 2. *Ulpmerka*—applied to the boys who, at the age of 10-12 years, have been 'tossed in the air,' and painted on the back and chest; 3. *Arrakurta*—after circumcision, which takes place at puberty or very shortly after; 4. *Ertwa-kurka*—after the youth has undergone the ceremony of 'sub-incision,' which occurs a short time after circumcision; 5. *Urliara*—after he has gone through the 'Engwurra, or Fire Ceremony,' a rite to which young men of 20-25 years, or even somewhat older, are subjected.

It is interesting to note that the Ulpmerka boy is told that 'this ceremony will promote his growth, and that the time has now come when he must no longer play with and live at the camp of the women, but must go to that of the unmarried men and live with them. He begins to accompany the men in their hunting expeditions, listens to their talks around the camp-fire at night, and looks forward to the time when he shall be admitted to the privilege of manhood.' Of the Engwurra ceremony, the natives say it makes the boys *ertwa mŭrra oknirra*, 'men, good, very, *or* great.'

The Omaha Indians, as Miss Alice C. Fletcher notes in her account of the ritual of the scalp-lock (212, p. 447),

[1] *Nature*, Vol. LVI. pp. 136-139.

recognised four stages in man's life upon earth: 1. Childhood, which was conceived to begin when the child was able to walk steadily and be independent of its mother. 2. Youth. 3. Manhood. 4. Old age. This simple division serves for very many other primitive peoples as well.

In China, where reverence and ceremony have always counted for so much, the passage from childhood to manhood was marked out ages ago in a fashion peculiar to the Flowery Kingdom. In the Lî Kî (the text of which is certainly 1900 years old) the following are given as proper answers to questions respecting the 'grown-up' character of individuals of various ranks: *Emperor:* He has begun to wear a robe so many feet long. *Ruler of a State:* He is able to attend to the services in the ancestral temple, and at the altars of the spirits of the land and grain. *Son of great Officer:* He is able to drive. *Son of ordinary Officer:* He can manage the conveying of a salutation, or a message. *Son of common Man:* He is able to carry a bundle of firewood (559, p. 115).

The 'Ages' of Emotional Expression.—Mantegazza, in his work on *Physiognomy and Expression*, thus divides human life as marked into periods by characteristic joys (399, p. 118): 1. *Infancy and Childhood.* Good humour; consciousness of perfect health. 2. *Adolescence.* Heedlessness; muscular intoxication. 3. *Youth.* Joys of love; contemplation of the world through rose-coloured glasses. 4. *Adult age.* The pleasures of strife and of satisfied self-esteem. 5. *Old age.* The tender joys of affection; the melancholy of tender memories.

The corresponding grief periods are as follows: 1. *Childhood.* Cries without tears; abundant weeping. 2. *Adolescence.* Calm and melancholy sadness. 3. *Youth.* Menacing reaction. 4. *Adult age.* Expression of bitterness. 5. *Old age.* Plaintive groans and tears.

As a general formula, or *résumé* of the comparative physiology of expression at different ages, Mantegazza gives the following (399, p. 223):—1. *Little child.* Expression strong and poor. 2. *Older child.* Expression strong and fairly rich in peculiarities. 3. *Young man.* Expression strong, rich, and, above all, expansive. 4. *Adult.* Expression better balanced; rather richer in peculiarities of great intensity; becoming less and less expansive. 5. *Old man.* Expression feeble, uncertain and very concentric.

According to Mantegazza the expression of a little child under painful emotions 'resembles that of a monkey or a negro,' while, in a child of three, with its few speech-gestures, we have before us 'the picture of a savage who accentuates badly the striking points of his discourse and the extreme degrees of his emotion.' The 'expression of transition,' to be noted at the intermediate age between early childhood and youth, persists in the permanent condition in the men of lower race, and, in the higher races, in stupid individuals. In old age, expression takes on again an infantile character, while 'feminine expression may be characterised in a word by saying that it somewhat resembles that of the child.'

Some of the anatomists, physiologists and anthropologists have gone into great detail in distinguishing the growth periods of the human body and its organs.

The 'Ages' of the Physiologist and the Anatomist.—Dr E. Verrier (663, pp. 6-8), who confesses his liking, which Hippocrates shared, for the good number seven, divides human life in these periods: 1. *First childhood* (*le premier âge*), from birth to seven years, the epoch of dentition. 2. *Second childhood* (*la deuxième enfance*), from seven to fourteen years, epoch of the production of the seminal liquid. 3. *Adolescence*, from fourteen to twenty-one years, until the appearance of the beard. 4. *Youth* (*juvénilité*) from twenty-one to twenty-eight years, until the complete growth of the body. 5. *Manhood* (*l'homme fait*), from twenty-eight to forty-nine years. 6. *Age* (*l'homme âgé*), from forty-nine to fifty-six years. 7. *Old age* (*la vieillesse*), from fifty-six years until death. The first childhood may be divided into sub-periods: (1) Suckling-time, from birth to the end of the second year. (2) From the second to the third year.

The first childhood is susceptible of several sub-divisions, and Dr Verrier applies the term 'new-born' to the child only till the falling of the umbilical cord, usually about the fifth day of life.

Lacassagne recognises the following periods of human life from the beginning to the end: 1. *Fœtal life.* 2. *First childhood* up to the seventh month. 3. *Second childhood*, from the seventh month to the second year. 4. *Third childhood*, from the second to the seventh year. 5. *Adolescence*, from the seventh to the fifteenth year. 6. *Puberty*, from the fifteenth to the twentieth year. 7. *Adult age*, from the twentieth to the thirtieth year. 8. *Virility*, from the thirtieth to the fortieth

year. 9. '*Age de retour*,' from the fortieth to the sixtieth year. 10. *Old age*, from the sixtieth year till death (344, p. 85).

Springer, from the point of view of growth, which he defines as 'not an individual state, a particular biological force, simply a manner of being of the evolution of living matter—a characteristic of the first stadium of evolution' (607, p. 15), recognises three periods of growth in man: 1. *First childhood*, from birth to weaning—at most two years; 2. *Second childhood*, from weaning to puberty—lasts till about 10-12 years, varying however a good deal with sex, race, climate, etc.; 3. *Early manhood*, from puberty to complete development at about 20-22 years (with variations).

An all-important factor of growth is food (and mode of taking food); in the critical transition epochs food plays a dominant *rôle* physiologically. The link between the first and the second period of childhood is weaning (mastication begins almost with walking), and after weaning, diseases take on themselves a more adult-like character, and to the influence of weaning upon nutrition the author credits '75 per cent. of the deaths among infants confided to hired nurses.' Weaning is *the* critical period of infancy, and much of the rachitis developing in childhood spring from premature or from tardy weaning. It is during the period of growth that 'all the attributes which specially characterise the human species, depending on the nervous system, develop, for at birth the child's nervous system is completely animal.'

Tigerstedt, in his *Human Physiology* (640, II. p. 412), gives the common German division of life-periods as follows: 1. *New-born child*, from birth to the fall of the navel-string, a period of about 4-5 days. 2. *Suckling*, from the end of the first period to about the seventh or ninth month, the time of the first dentition. 3. *Later childhood*, up to about the seventh year, the time of the second dentition. 4. *Boyhood*, up to the beginnings of puberty, some time about the thirteenth or fourteenth year. 5. *Youth*, up to the complete development of the body, or about 19-21 years. 6. *Mature age*, up to the beginning of the *retour* (in women, the climacteric) between the forty-fifth and the fiftieth year. 7. *Later manhood and old age*. Of these periods, 'the first five comprehend the time of growth, the sixth is the age of full corporeal and intellectual capacity and ability, while in the seventh there gradually occur disturbances

in the structure and functions of the body, correlated with a greater or less degree of chronic morbid influences.'

Camerer recognises two great periods of growth in the life of the child: 1. The first year, and chiefly the first half of it; 2. From fourteen to seventeen years in boys, and from eleven to fourteen years in girls. The disturbance of the increase in weight at the beginning of the last quarter of the first year may be ascribed to the development of the teeth. Artificially-nourished infants remain for the first half year considerably behind, are at the end of the first half year about one kilogram lighter than breast-fed children, but have come up to the average of the latter by the end of the first year (101, p. 3). Camerer seeks to distinguish from the growth which takes place till the attainment of full development, the changes in height and weight which, under the influence of external circumstances, bring about in most men a slow, gradual increase of weight, etc.—a gradual alteration of the body, beginning with adult age and ceasing only with old age. Other period-divisions may be found cited in Burk (91, p. 254).

Mr Arthur Macdonald, in his 'Experimental Study of Children,' after 'comparing the results of Weissenberg and others,' concludes that the human body has the following six periods of growth (383, p. 1129): 1. *From birth to the sixth or eighth year.* A period of very rapid growth—the body being more than twice as large at the end than at the beginning of it. 2. *From the eleventh to the fourteenth year.* A period of slow growth. 3. *From the sixteenth to the seventeenth year.* A period marked by 'a sudden advance in growth, which is in relation with the development of puberty.' 4. *Period of slow growth,* 'extending up to thirty years for height, and up to fifty for chest-girth,' when 'growth in the proper sense has ceased.' 5. *A period of rest,* which, 'in normal conditions is from thirty to fifty years of age, and is one of full symmetrical development.' 6. *Last period of life,* 'characterised by a decrease in all dimensions of the body.'

It is to be noted that these periods do not always fall at the same age, and that, moreover, all post-natal growth is to a very large extent the maturing of impulses received during fœtal life, the intensity of which is demonstrated by the fact that the fœtus at the end of the fœtal life is 2500 times larger than the ovum out of which it has been developed.

John Huart (577, II. p. 438), the Spanish philosopher and

physician of the sixteenth century, who recognised as the epoch of reason, *par excellence*, in the human being the years from thirty-three to fifty, held that childhood did not end at the same time with all men—with some the close of childhood was the twelfth, with others the fourteenth, and with others again the sixteenth year. With the last every epoch of their life was longer than with the others—their youth lasted till forty, their manhood till sixty, while eighty years saw the close of their old age. With those whose childhood had ended with the twelfth year, life was shorter in all respects; their use of reason, moreover, was precocious, as was also their loss of the power of imagination, while their beard and other physical marks were also early in appearance.

Dr B. G. Alvarez distinguishes, after birth, the following periods of childhood (5, p. 10): 1. *New-born child* (*recién nacido*), from birth to the fall of the remains of the umbilical cord and its cicatrisation, the last taking place at least by the fifteenth day of life, the former most frequently at about the fifth or sixth day after birth. 2. *First childhood* (*primera infancia*), from the sixteenth day of life up to about the third year, period of completion of the first dentition with the appearance of the fifth group of teeth, the four second molars. Precocity and retardation of dentition seem largely pathological. 3. *Second childhood*, from about the third to about the fifteenth year, when the sexual functions make their appearance, and the exuberance of life is not wholly self-centred.

Adolescence, Dr Alvarez takes, in its etymological sense, to mean the period of growth, which, for him, includes not only all childhood, but the early years of adult life as well, extending at least to the twenty-fourth year. Adult he applies to man beyond the age of childhood. Dr Alvarez fairly represents modern Spanish writers.

Anatomists, physiologists, and anthropologists, who have gone into detailed studies of the various parts and organs of the body, have found that all or nearly all of them have characteristic periods of growth and development, and certain periodicities of acceleration and retardation of growth and repose—concerning which something is said in another place where the questions of growth, variation, etc., are discussed. That these 'periods' or 'epochs' correspond to something in the history of the race can readily be believed.

The 'Ages' recognised by Medicine in the Child.—Accord-

ing to Dr W. S. Christopher, of Chicago, there are, from the medical point of view, three critical periods in child-life: 1. *Infancy*, practically the first three years of life, 'with the gastro-enteric tract as the place of least resistance.' The use of the bottle seems one of the chief factors in the production of great infant mortality, and 'nursing is as much a part of the reproductive process as the development of the child *in utero*.' Exaggerated pathogenic influence has been ascribed to the process of cutting the teeth, 'which is practically without harm to the child, and the relationship between the dangers to child-life and the period of dentition is purely one of coincidence.' Food-poisons are the great danger here. 2. *The fatigue period*—from seven to nine years—a period during which 'fatigue occurs very readily, and one in which damage to the heart is likely to be produced.' Dilated heart, shortness of breath, and 'an appearance of general laziness' (which, above all things else, does not call for more exercise, but less labour and fatigue, less school-work and less forced expenditure of energy) are common at this time—the statistics of some 32,800 school-children (aged 6-13 years) seem to show that 'the child of seven fatigues less readily than the child of six, but the child of eight fatigues more readily than the child of either six or seven. The child of nine fatigues less readily than the child of eight, but has a fatigue limit about equal to that of a child of seven. As the years advance the readiness of fatigue diminishes materially' [the tests were concerned with voluntary motor ability and muscle-strength] 'until the period of puberty is reached, when again fatigue more readily occurs than in the years immediately preceding.' 3. *The period of puberty*—in the girl between twelve and a half and fifteen and a half years; in the boy somewhat later—a period characterised by danger to the reproductive organs, which are acquiring their potential strength, and to the brain, now subject to the great strain of school-life. During this period 'the amount of food demanded is much larger than immediately before or immediately after'; lack of it and excessive study mean sterile women by-and-by.

Periods from the Point of View of Degeneracy.—Clouston, in his study of *The Neuroses of Development* (114, p. 12), makes four divisions of the developmental period of human life, as follows: 1. Formative and Embyronic Stage (Intra-Uterine life). 2. Period of most rapid Brain-Growth, Special Sense Education,

Motor Co-ordinations and Speech (from birth up to seven years). 3. Period of Co-ordination of Motion and Emotion (from seven to thirteen). 4. Puberty and Adolescence (from thirteen to twenty-five). There can also be recognised 'a period of growth and development together from birth to seventeen years,' and 'a period of development alone without growth, from seventeen to full maturity at about twenty-five.' The 'functional and critical ages' within the developmental epoch, noted by Clouston, are: (*a*) the crisis of birth; (*b*) the age of suckling; (*c*) the age of dentition; (*d*) that of fastest increase of brain-growth between four and seven; (*e*) that of puberty; (*f*) that of greatest proportional increase in general body bulk, height and weight next to the first year of life, between fourteen and seventeen; (*g*) that of the gradual and steady maturity and solidification of the bones and tissues generally between eighteen and twenty-five; (*h*) the period of the completion of the organism, structurally and functionally, sexually, reproductively and mental, about twenty-five. From the point of view of the study of degeneration-stigmata Dr W. C. Krauss (336, p. 56) divides the life-history of the individual into three epochs: 1. *Pre-natal.* Here the evidence of degeneracy is teratological, and 'the causes underlying degeneracy from a physical and psychical standpoint are in the majority of cases identical with those upon which the science of teratology rests. 2. *Post-natal.* Here the evidence is 'purely subjective or physical and functional'—deviations of the general proportions of the body, peculiar forms of special parts, lack of functional activity of the general organs of the body, lack of functional activity of the special organs, developmental irregularities, including habits. 3. *Post-developmental.* Here the evidence is mainly objective or psychical—mental, moral, sensual stigmata.

Periods from the Point of View of Physical Culture.—Dr E. M. Hartwell, of Boston, studying man from the point of view of physical training, and holding to the general thesis that 'man's field of education is the nervous system,' in relation to periods of growth, maturity and decline, subdivides the period of immaturity, growth and evolution of maturity in the following fashion: 1. *From birth to the close of the eighth year.* A period of imitation, inquisitiveness and acquisition, characterised by 'an immense growth of brain,' and the development of the sensory organs, perception and memory. A period when

authority is needed, and where only 'easy and elementary games belong.' 2. *From the ninth to about the end of the sixteenth year.* A period characterised by growth in height and weight, muscles, and motor co-ordination; the passage from the mental condition of childhood to the state of youth and manhood is marked by self-consciousness and the demand for reason. During this period physical education may be more varied and complicated, but no feats of extraordinary skill must be ventured upon. 3. *From the seventeenth to the end of the twenty-fourth year.* The period of established adolescence, when 'the life of the race begins to be reflected in the life of the individual,' with distinctive development of character as well as of body and mind, and 'the co-ordination of the emotions with self-chosen aims and ideals.' The brain and the muscles are now practically full-grown, and reasonable 'great feats' may be attempted. In an interesting essay on 'Some Psychical Aspects of Muscular Exercise' (257), Dr Luther Gulick of Springfield, Mass., who sees in play a great factor in human gymnastics, makes the following divisions in pre-adult human life: 1. *Babyhood*, from birth to about the third year. Characterised by a love of such plays as rattling and mussing about paper, etc., picking, dropping, rolling, pushing, splashing sand, dirt, stones and the like. 2. *Early childhood*, from three to about seven. Marked by love for building with blocks, swinging, climbing, cutting, etc. Also by an interest in the latter portion of the period (by girls) in dolls, and an inquisitive but not sympathetic interest in 'bugs.' Before seven, also, 'children rarely play games spontaneously.' 3. *Childhood*, from seven to twelve. Characterised by the 'height of doll-play,' and elaborate house-keeping, together with the development of competition in boys' games. 4. *Early adolescence*, from twelve to seventeen. Marked by the development of group-games (ball, etc.), and of the predatory instincts. 5. *Later adolescence.* Marked 'by the extraordinary development of group-games to the limit of adolescence.'

In early childhood games and exercises seem to be 'individualistic and non-competitive, and for the accomplishment and observation of objective results'; in later childhood, individualistic and competitive, with active muscular correlation and sense-judgment; in adolescence, socialistic, and characterised by heathen endurance, self-control, loyalty, trust, etc., and by a predilection for such savage occupations as hunting, fishing, and the like.

Very interesting is the investigation of the periods or epochs in the development of the senses, of some of which extended studies have recently been made.

Periods in the Development of the Senses (*Smell, Colour*).—The most extensive study of the sense of smell in children is Dr Adriano Garbini's 'Evolution of the Olfactive Sense in Infancy,' containing the results of investigations upon ten new-born babes and 415 children (girls 177, boys 238) between three and six years of age (234).

In the olfactive development of the child, Dr Garbini recognises, in the first six years, six periods, which, with their distinctive characteristics, are:—

I. *Tactile Period*—the first three hours of life. During this period, by reason of the thick stratum of mucus which covers the olfactive substance, the child suffers anosmia, and feels only tactile stimuli, which produce disagreeable impressions and are reacted to with reflex phenomena.

II. *Osmo-tactile Period*—from about the third hour to about the fourth week. During this period the respiratory region of the new-born child is much more sensitive to stimuli of touch, easily reacting with sneezing, and he begins to have osmo-tactile sensations by means of acutely odorous substances (osmo-tactile substances), but has as yet no olfactive sensations.

III. *Osmo-gustative Period*—from about the fourth week to about the fourteenth month. During this period the suckling begins to have osmo-gustative sensations, perceiving the odour of milk, and differentiating the milk of his own mother or nurse from that of other women, and distinguishing by their odour alimentary substances. From odorous substances, if they are nauseous, he has reflex (but not odorous) stimuli at the stomach; if they are fragrant or aromatic, no sensation.

IV. *Olfactive Period*—from the fourteenth month to about the third year of life. During this period the child begins to experience true olfactive sensations. The first reactions to odorous substances occur in the fifteenth and sixteenth month, the nauseous first, then the rank odours, the aromatic and the balsamic. The mimetic reactions commence to vary according to the odours after the twentieth month, and between the nineteenth and the twenty-second month the child begins to clearly distinguish odours from tastes.

V. *Continuation of the Fourth Period*—the third year of life. During this period the mimetic reactions of the child, with the

perception of odours stimuli, are less accentuated, and he has odorous perceptions of different substances with different intensities of olfactive stimulus.

VI. *Fourth, Fifth and Sixth Years of Life.*—During this period the child gains something in qualitative perception of odorous stimuli, and makes progress in correlating the olfactive perceptions, and the corresponding verbal expressions. Here appears also the ability to discern the different intensities of the same odour, but with an average olfactive acuteness very weak (6.3) as compared with that of the adult (2.9); moreover, the reaction time can be two and a half times as long as that of adults. Girls seem to have a slightly more acute sense of smell than boys.

In the ontogenetic development of the olfactive functions, according to Garbini, we have 'a perfect repetition of the phylogenetic evolution,' and in the child we can note 'in the progressive order of development of the nasal mucose membrane the following stages, tactile, osmo-tactile, osmo-gustative, olfactive, corresponding to the four phylogenetic stages met with in the Protozoa, the invertebrate Metazoa, the Vertebrates with bronchial respiration, and the higher Vertebrates.' And being late to appear in the animal series, the sense of smell develops late in the child, while the general neglect of exercise and development of the olfactive sense in adults has a strong (hereditary) influence in hindering its acute development. Garbini strongly advises 'a gymnastic of the sense of smell' for children—exercises, arranged in the order of phylogenetic growth, which shall improve and strengthen the child's perception, a useful and justifiable departure, he thinks, from the over-driven 'play-system' of the kindergarten.

To the same investigator we owe an excellent study of the evolution of the sense of colour in young children, giving the results of numerous and detailed experiments upon 557 Italian children (girls 247, boys 310) between the ages of three and six years (233).

Garbini points out that too much importance must not be laid on individual cases (Preyer, Binet), while the 'recognition' method depends too much upon the uncertain factor of attention and the unstable one of memory. The author, therefore, used together the silent method (matching the colour given to the child) and the name method, upon a large number of children. He recognises in the life of the child as studied by him six periods, with their characteristics, as follows :—

I. *Photodispheric Period.*—From birth up to about the fifth day of life. The new-born child, by reason of retinal hyperæsthesia, bears light badly, and while feeling light, does not perceive its elements, and from luminous impressions has only internal sensations of greater or less agreeableness; is, in fact, photophobic—opening its eyes in the dark or in shadow.

II. *Photoœsthesic Period.*—From about the fifth to about the thirtieth day of life. Commencing, from the fifth to the seventh day, to be pleasurably impressed by diffused light, the infant becomes clearly photophile between the tenth and the twenty-fifth day. From luminous impressions he has photoæsthesic sensations supplied by simple perceptions of light and dark.

III. *Visive Period.*—From the fifth week to about the eighteenth month of life. The little child enters upon the development of visive perceptions properly so called. He distinguishes more and more light and dark, and begins to differentiate white from black and from grey. He commences to have visive perceptions, at distances less than a metre, between the twenty-eighth and the thirty-fifth day. He begins to be able, by the seventh week, to follow an object slowly displaced, and by the fifth month to follow others with more rapid movements.

IV. *Chromatic Period.*—From the sixteenth to the twenty-fourth month of life. The child continues to have more and more delicate photoæsthesic and visive perceptions, and begins to have the first chromatic perceptions—red and green.

V. *Continuation of No. IV.*—From the second to the third year of life. The child continues to improve its perceptions of red and green; begins to differentiate yellow and has the first (not yet definite) impressions of orange, blue, violet. He can name quite correctly red, less exactly green, and badly the other colours.

VI. *Continuation of No. V.*—From the fourth to the sixth year of life. The child completes the fitting out of the chromatic perceptivity, becoming sufficiently familiar with the distinction of orange, blue, violet. At the same time he becomes more and more familiar with the correlation between the colour perceptions and the corresponding verbal expressions, not one of which, however, can as yet be said to be perfect with him.

In reality, at the end of the sixth year the chromatic

development is still in its first stages; at that period about 2 per cent. of all children are unable to name any colour, and only 35 per cent. are able to name all six well.

The influence of sex upon the growth of the colour-sense in early childhood is not very great. In the fourth year it seems to be more developed in boys, in the fifth and sixth years in girls. In the fourth, fifth and sixth years the average sense for red, green, yellow, orange is greater in boys, while the sense for blue and violet — the last colours perceived in the chromatic evolution—is greater in girls. A noteworthy fact is that 'the order in which the child learns to connect the verbal expressions with their corresponding chromatic perceptions is identical with the successive order of the latter, viz., red, green, yellow, orange, blue, violet.' But these two series of phenomena are parallel, not synchronous, the power to correlate expression (verbal) and perception coming about a year later than the perception of the colours themselves. This lack of synchronism between chromatic perceptions and their verbal expressions is due, according to Garbini, to the fact that the latter 'belong to a psychic phenomenon of a higher order than that of the former.'

Psychic Periods.—Lesshaft, who has investigated types of character and temperament, recognises five periods in human life: (1) *Chaos period*—the new-born child; (2) *Reflex-rational*—till the use of speech, about the second year; (3) *Concrete imitation period*—up to school age; (4) *Abstract imitation period*—up to about twenty years; (5) *Critico-creative period*—ripe age of man.

Dr Paul Valentin, from the point of view of developmental psychology, thus divides the life of the child (658):—

I. *Instinctive Period*—the first few months of life. Psychic life is affective only during the first few weeks and up to the third month (after which some vague knowledge begins) the child is what Virchow terms 'a spinal reflex being.'

II. *Imitative Period*—up to the sixth or seventh year. During this epoch the suckling changes to the real child, and the young human being slowly grows out of the absolute domination of the emotional element.

III. *Attentive Period*—from about seven years till puberty occurs. This is the attentive epoch of intellectual development controlled by the sense of personal effort, the most important factor in adaptation to the *milieu*.

In these three epochs the child from an animal becomes a man ; those who are incapable of responding to this pliable, moulding process are degenerates. Here heredity, unless it is pathological, can be conquered, for it has nothing absolutely fatal about it.

Functional Periods ; Social Epochs.—Dr Guibert, accepting the view that, in certain diseases of the nervous system, 'the more recent acquisitions, the higher, more perfect faculties, are the first to disappear, while the last so to do are the more rudimentary functions of the beginnings of life,' recognises four periods in childhood and youth as characterised by successive developments of functional aptitudes and mental functions, which periods in reverse order represent the course of decay in mental disorders and senility generally. These periods are, briefly, as follows (256, p. 714) :—

1. *Period of Subjective and Instinctive Life.* — This subjective or instinctive life (conscious or not), which may not require the active intervention of the cerebral cortex, but only that of the medulla, and perhaps of the nervous ganglia at the base of the encephalon, is all that exists in the new-born infant and in certain hydrocephalic individuals—a period of purely reflex activity. Here are 'incoherent manifestations of elementary aptitudes, without any subordination or complex functional determination,' and subjective life comprises 'the gamut of sensations, impressions, instinctive needs, automatic unco-ordinated movements, incompletely and imperfectly co-ordinated movements determined by needs to be satisfied, emotions to be manifested.' The manifestations of this period are developed by 'progressive differentiation and adaptation,' and the subjective life is not suppressed by the superposition of the functional aptitudes of succeeding periods, but 'constitutes the basis and foundation without which such functions could neither arise nor be developed.' Among the more or less abnormal or pathological manifestations of the subjective life are dreaming, hallucination, delirium, etc., which under certain circumstances remain to disturb profoundly the regular phenomena of objective, social and professional life. 2. *Period of Objective Life.* Beginning generally before the sixth month of the child's existence. Greater utilisation of the brain is indicated here by the aptitudes which go to make up the objective life of the period. Automatic or instinctive exteriorisation (afterwards conscious

and effective); automatic or instinctive recognition (then effective and conscious); prehension (afterwards active); walking (afterwards active and certain); natural language and family life, the necessary preface of the succeeding period. The majority of the so-called higher animals have had their mental evolution arrested at this period, and at its beginning we find also arrested the idiots who are termed automatic, who, unable to adapt themselves to savage or semi-savage life, much less to civilised life, seem to belong to the human race only with the body, not the brain. 3. *Period of Social Life.* This period is marked by the instinctive imitation which gives birth to morals, customs; the echolalia, which, in the child, precedes concrete language; understood language, spoken language; more vigilant and attentive aptitude for exteriorisation (social), games, dance, group-walking, gymnastics, hunting, fishing, agriculture, breeding, construction of huts, combined efforts of several individuals; foresight and collective experience; aptitude for school life, for attention, for voluntary intellectual efforts, reading, elementary writing; aptitude for recognising empiric genera and species transmitted by language; the aptitude (with the provision of tools, clothing, food, weapons) for tribal, savage or semi-savage life—the result of preceding functional aptitudes come to their habitual development. The apes (especially the anthropomorphic), by virtue of their instinct of imitation, and the more intelligent of the microcephalic idiots (who reach the chatter of infants) may be said to have advanced a little into this period, while imbeciles, the majority of savage and half-savage men, together with not a few men living in the midst of civilisation, are arrested in their mental development in this third period, remaining refractory to the mass of abstract ideas, the intelligence and culture of the next epoch. 4. *Period of Professional and Scientific Life.* The functional aptitudes of this period, methodic exteriorisation, attention, professional and scientific observation; recognition, determination of varieties, species, genera, natural families scientifically or empirically established; aptitude for natural classifications, scientific and professional nomenclatures and abstractions; aptitude for civilised life, liberal professions, abstract, intellectual life, and, *a fortiori*, aptitude for intelligent apprenticeship, for professional, free, provident, perfectible exercise.

In all the period of progress one must suppose 'the

gradual intervention of new centres, more and more specialised, which, from the state of inertia and functional torpor in which they are still plunged at birth, must submit to the action of repeated and concordant excitations, passing by the progressive evolution of their constituent elements to an active state.'

A good deal of valuable reasoning along lines not vastly dissimilar may be found in Tarde, Baldwin, Giddings and other writers who have taken up the consideration of imitation, and the social development of the individual and the race. Inspired by Baldwin, in some respects, is the investigation of the 'institutional activities' of American children by Mr H. D. Sheldon, who finds that the years of childhood from four to fourteen contain two distinctly marked periods. 1. *Period of imitation.* From four to ten. Characterised by 'free spontaneous imitation of every form of adult institution,' the child responding easily and sympathetically to his environment. Family, store, church, school, etc., are all, sometimes naïvely, sometimes very ingeniously, imitated. 2. *Period of invention.* From ten to fourteen. Characterised by 'less imitation and play, and more invention and following of instinct.' Among boys there is 'a tendency to form social units characteristic of lower stages of civilisation'—predatory organisation, 'street gangs,' with imitation ceremonies sometimes of savage sort, discipline, *esprit de corps*, etc., corresponding (588).

Stages in the Development of the Imagination. — The 'Evolution of the Imagination' has been discussed by Dr V. Giuffrida-Ruggeri (245) upon the basis of the most recent studies and researches of Binet, Speranski, Thomas, Paulhan, Dugas, Ribot, Philippe, Baldwin, Fouillée, Ambrosi, etc. Adopting Binet's definition of imagination as 'the faculty of creating groups of images which do not correspond to any external reality,' the author outlines the story of its development thus :—

I. *Simply Objective Stage.* — Exemplified in the early Greek legends, where metamorphosis (corresponding to the real mechanism of reasoning) constitutes almost all the mechanism, illustrating the fact that even the brilliant imagination of this wonderful people, no less than other mental products, can be led back to a process of reasoning ; and in 'the objective imagination of children, improperly called "creative," since it creates nothing, but transforms, through the wonted mechanism, animating sticks, changing leaves of trees

into dishes,' etc. Here also 'the collective mind reflects the individual mind by magnifying it—the luxuriating cycle of Greek legends, true spring of voluntary illusions, corresponds to what sleep is in the individual, the true type of metamorphosis-hallucinations,' and to the phenomena of waking sleep, reverie, etc. The metamorphosis of the early Greek legends 'is not merely a transition from the known to the unknown, not merely the extension of an anterior knowledge, but is also a classification, the first classification, perhaps, ever made in Greece. Transformation into animals generally indicates deterioration, as does metamorphosis into rocks; while transformation into plants (flowers, particularly) is almost a passage into a better life; transformation into streams or fountains seems of ambiguous value, and metamorphosis into stars is always reserved for the most markedly deserving and the most brilliant glories.' Although the 'master road' of Greek imagination is metamorphosis, the idea of contrast plays its *rôle* also, and that factor, so common in childhood, which Baldwin has denominated 'suggestion by contradiction.'

II. *Schematic Stage.*—Although the imagination, 'in its simple form is a logical conclusion, it also forms part of a delirium, the evolution and complication of whose mechanism is wonderfully aided by schematic figures (or groups of figures) or images—a schematic figure ("eyes of fire," "words of fire," etc.) is a figure of manifold attributes, not confined merely to one or two resemblances.' Our whole intellectual life, and the intellectual life of peoples as well, are full of these schematic figures, *résumés* of a long series of experiences. The schematic stage is chiefly important in art, 'which, objectively considered, reaches its relative perfection when the oscillations dependent upon the diverse individual conceptions are reduced to a minimum.' The process of reduction by which the schematic figure is reached appears in Philippe's experiments on the transformation of mental images, in which the unconscious comparison of a figure (retraced after some length of time) with pre-existing images, results in the elimination of a number of the perceptions which were part of the old design, and we have at last a very simple and clearly-defined scheme. Just as a child prefers a wax doll to a marble doll, so we are less pleased with the best made figure in wax than with a statue of marble, not (as Speranski thinks) by reason of its greater likeness to reality, but on account of the clash with the pre-existing plastic

scheme. This schematic stage of the imagination is revealed in very many Greek legends and myths (the banquet of Atreus, Pelops, Arcas and Tereus; the challenge of Hippodamia and Atalanta; the calumny of Hippolytus, Bellerophon, Phryxus, etc.), and has analogies in the gest of the wandering knight of the Middle Ages. It is of greatest importance in literary compositions, novels, etc.

III. *Symbolic Stage.*—When, in the process of reduction of its attributes undergone by an image (or a group of images), it is removed from the sphere of concrete facts into that of abstract, we have the foundation of a symbol; wings, *e.g.*, come to signify not alone speed, but desire, pleasure, curiosity, daring, genius, thought, time, etc. In the poems of Goethe and the music of Wagner, the dramas of Ibsen and the pictures of the symbolists, groups (more or less complex) of figures correspond to as many symbols. Examples of products of the imagination in the symbolic stage are also the ancient fables and the enigmas of Pythagoras, but not the personifications of the old myths, for animism is something else than the result of abstraction. Experimental proofs of the mechanism of the symbolic stage of the imagination are revealed by hypnotism, the symbolism developed, *e.g.*, from the placing of the hands to suggest the scheme of prayer. An expression (a line of Racine, *e.g.*) may be schematic or symbolic, ugly or beautiful, according as the reader's imagination is in the schematic stage (with concrete images) or in the symbolic stage (with abstract elements). As the concrete yields more and more to the abstract, the brilliant metaphors gradually become more and more empty formulæ, following the general law of senility, the words losing first a portion then all of their significance.

The evolution of the imagination is nowhere, however, better exhibited, the author thinks, than in the story of the rise, development and decadence of the religious sentiment: 'In the great religions of classic antiquity, when the external world was reflected in the yet infantile mind of man, as in a mirror we see the imagination in its splendid phantasmagoric objective phase. In the Middle Ages, when the religious sentiment reached its chief paroxysm, the imagination became schematic. Finally, when religion is on the way to become one of the many social conveniences, the imagination turns symbolical.'

Spencer's distinction between the 'reproductive' and the

'constructive' imagination, a distinction adopted by many other psychologists—as examples of 'reproductive' imagination, have been cited, the infant's recognition of the maternal breast, its sudden turning at hearing a bird sing, its brightening up when the nurse puts on a walking dress, the fact of saying 'papa' at the sight of any man—is rejected by Dr Giuffrida-Ruggeri, these things not differing sufficiently from the ordinary forms of association to deserve a separate name, or from memory. Fouillée, indeed, holds that 'reproductive imagination is not distinguished from memory.' Wundt's distinction of 'active' and 'passive' imagination he deems preferable. At the basis of the process of reduction involved in the evolution of the imagination lies the 'law of least effort,' to which Ferrero, in his study of the psychology of symbolism, has attached so much importance and so well illustrated, and imagination itself belongs to the second—epoch of objective reference—subdivision of mental development according to Baldwin, and 'its appearance coincides with the appearance of the diffuse, irregular, aimless, and powerfully pleasant or painful movements originating in the superabundance of nervous tonality, and the luxuriousness of vital energy, which invades the being free from the fearful contemplation of the ego so weak in respect to the environment. Indeed, the imagination, itself, at this stage, an inevitable reaction to the stimuli of the environment, is one form of such movements.'

In connection with the part played in the schematic imagination by the data of the eye and ear, in which the representative element dominates all images, the author remarks that 'the imagination of the deaf-mute never passes the schematic stage,' his imaginative patrimony being, probably, more deficient than that of the born-blind.

Ribot divides the history of the evolution of general ideas in the individual and the race into the following stages: 1. *Pre-lingual.* Seen in animals, children, deaf-mutes. 2. *Word-idea.* Seen in primitive races of man—here the ideas are accompanied by words, and an increasingly important *rôle* attaches to language. 3. *Classifactory and scientific.* In this stage occurs the complete substitution of words for ideas (535).

Religious Periods of Childhood.—Dr Oscar Chrisman, in his essay on 'Religious Periods of Child-Growth' (111), divides child-life into five periods: (1) Pre-natal (from conception to birth); (2) Infancy (from birth to the obtaining of temporary

teeth, at about 2½ years of age); (3) Childhood (from the obtaining of temporary teeth to the obtaining of permanent teeth at about 10 years of age); (4) Pubescence (from the gaining of permanent teeth to 'the time of the initial development of the function of reproduction, in girls at about the age of 12-13 years, in boys 15-16 years);' (5) Adolescence (from the initial development to the attainment of the full perfection of the reproductive energy at about 25 years of age).

The stages of growth, suggested by Dr E. D. Starbuck, who has investigated the data of conversion and the psychological aspects of religion, are (611, p. 124): 'Childhood, the seed-time, up to twelve or thirteen; the beginning of youth, the time of germination, in which new life comes in a great wave at fourteen or fifteen, and its two wavelets, just before and just after the large one; next, youth, the growing time, in which the life forces are being sifted, readjusted and combined; by twenty-four and twenty-five the person has worked out a point of view, an individual insight, and become a positive factor in the religious life of the world. Each stage should be a preparation for the next, so that the person may merge naturally and evenly into a strong, beautiful, spiritual manhood or womanhood.' Moreover, according to Dr Starbuck (610, p. 272), 'the years of greatest frequency of conversions correspond with periods of greatest bodily growth for both males and females,' and there is 'a correspondence between the periods of most frequent conversions and puberty in both sexes.'

Periods of Growth of the Historic Sense.—From a study of the 'historic sense among children,' Mrs Mary S. Barnes (36, p. 92) finds indications of three periods of historical interest and activity in the young human being, the 'historical sense' appearing at least as early as seven. These epochs are: (1) *From seven or eight to about twelve or thirteen*—the period of 'striking biographies and events.' The biographies, themselves the basis of chronology, 'should be chosen from the field of action and interest allied to children's lives,' in other words, they should be taken from 'the personal, military and cultural aspects of history, and scarcely at all from the political or intellectual life.' (2) *From fourteen or fifteen up to about entrance to college, or after*—the period of interest in 'the statesman, thinkers, poets, as successors to the explorers and fighters of the earlier period'; of interest in, and thought

about, 'the concrete embodiments of a time, its documents, monuments, men and books'; of the beginning of reading between the lines, of criticism, etc. (3) *College years*—'the age of monographic special study'; the time when one needs to and can make 'the collection, comparison, criticism of sources themselves.'

Periods of Law Recognition.—The investigations of Professor Earl Barnes and Miss Estelle M. Darrah (145, p. 258) concerning 'children's attitude toward law,' seem to make clear the existence of two very diverse epochs during the period from seven years onward, as follows (the children in question are American, largely Californian): 1. *From six or seven to from ten to twelve*—the period of law-ignoring; of little regard, or appreciation for general laws and regulations; of arbitrary and severe reactions against the misdoings of others, of revenge-punishment, and atonement by suffering; of obedience to personal authority, not to rule or law; the period of outraged feelings and vague ideas. 2. *From about twelve* (the change may begin at ten, and is more rapid between twelve and thirteen) *to about sixteen*—after this the tendencies of the period increase with the years. The period of law recognition (personal authority is replaced by obedience to rule and law); of self-knowledge of feelings, of moderation in punishment, and recognition to some extent of the intentions of the offender. There is, even here, however, 'little recognition of a corrective aim in punishment,' traces of such appearing 'only in the later years, and then in comparatively few cases.' Up to ten years of age, at least, the school-children should be governed by personal authority and not by law, rule and regulation, 'each infraction of the law of right and each act of disobedience being treated on its individual merits.'

Migratory and Truant Periods.—Dr L. W. Kline, who has investigated the phenomena of truancy, migration, running away, etc., in childhood, finds that there are three periods, 'each differentiated from the other by certain characteristics, impulses and activities' (328, p. 395). These periods are as follows:—

1. *From the Time of being able to Walk easily to about the Third or Fourth Year.*—This period, which is 'common to all children, regardless of home life or physical conditions,' is 'characterised by aimlessness, openness and unconsciousness

of danger or any wrong,' while 'during their little escapade some very primitive, as well as semi-barbaric, practices crop out, *e.g.*, chasing and capturing animals, begging, taking things that please their fancy,' etc. Fifty cases of this period were studied.

2. *From the Fourth to the Seventh Year inclusive.*—This period, in which the child's likes and dislikes appear, and he is influenced by loneliness at home, lack of toys, and other amusements, by the abuse or cruelty and neglect of parents (though firm and proper home treatment will break the runaway habit) is marked by 'a dominating love for play and companions, and outdoor life.' This is the 'period of curiosity, the age of attempts, and a sort of diffused universal interest for nature and man.' At this time the child is attracted by all things, 'seeks the acquaintance of any and everybody, enjoys new sights and the unexpected, likes to do new things as a test of his courage, and to make explorations into new vicinities.' Toward the close of this period and the beginning of the next (although 'an occasional truant is born in the sixth or seventh year') many children give up the habit altogether, for now 'focussing down of interests, a growing love for parents, attachment to certain groups of playmates, fondness for school-work and teacher, are all forces overcoming and destroying this powerful relic of primitive man.' Eighty cases of this period were studied.

3. *From the Eighth to the Twelfth Year inclusive.*—At this time 'the child frequently abandons the habit altogether, due to the influence and integrity of the home, or he begins it in serious form for the first time in life, due to incompetent parents and an unattractive home, or to the impulse itself which dominates all his life activities, unfitting him to wrestle with fortune and destroying the desire to do so.' During this period the child is influenced by his impulsiveness, lack of persistence, impatience of restraint, carelessness of person, indifference towards property, lack of sympathy with society and its movements, etc. In a word, 'he stands out like an outcrop of an older formation, pointing the genetic psychologist back to the probable origin of the migrating instinct.' One hundred and twenty cases of this period were studied.

Criminological Periods of Childhood.—From the standpoint of penology Dr Appelius, omitting the early years of infancy, where parental control and restraint of incipient crime suffice,

recognises three epochs in the life of the immature man: (*a*) from the sixth to the twelfth year; (*b*) from the twelfth to the sixteenth year; (*c*) from the sixteenth to the close of the eighteenth year (14, p. 88). From the first two periods the usual crime-punishments should be rigorously excluded, but in the last the criminal actions of youths stand in very close relations to those of adults. No sharply-marked boundary can be noted between childhood and youth, but in general the frontier lies about the twelfth year, when sexual maturity (with its developmental changes) begins. Judicial punishment of children is not to be thought of, and in the period between the ages of twelve and sixteen, when criminal offences are largely the reflex of individual development, not so much the product of the general impulse of youth, which comes somewhat later, removal from bad parental and family environment, with transference to an educational and reformatory institution controlled by the State. For youthful criminals between sixteen and eighteen, imprisonment, reprimand, school-discipline, fine, are among the forms of punishment allowable, but not the modern prison-punishments. Dr Appelius thinks that the limit for the beginning of punishment should be raised to the end of the fourteenth year, and the end of the disposition of neglected children be made the end of the sixteenth year. Individuals under fourteen years of age lack, in most cases, moral maturity, and a crime-punishment can hardly with justice be meted out to them. This moral maturity is usually present in individuals between fourteen and sixteen; in individuals over sixteen years of age, general responsibility may be assumed, as well as the presence of moral maturity.

Dr Aschrott, the keynote of whose argument lies in the declaration 'a child who is still going to school does not belong in prison' (15, p. 22), is also strongly in favour of the fourteenth year limit. At least the close of school-childhood ought to precede the beginning of criminal youth and manhood. The same recommendation was made by the committee of the International Criminological Congress at Halle in 1891, who took the view that 'no individual who has not yet completed his or her fourteenth year should be judicially punished for the commission of a punishable action, State-superintended education being here the remedy to be pursued' (14, p. 201). The views of the committee were adopted by

the Conference held in Berlin in December 1891, and have received general adhesion in Germany (14, p. 233).

Periods of Vocal Evolution.—Nowhere more, perhaps, do the divisions and epochs appear to better (or to worse) advantage than in the evolution of the voice and speech of the child. The evolution of the voice in children up to the age of six has been carefully studied by Dr Adriano Garbini, who sums up the result of his researches as follows (232):—

I. *New-born Child.*—First cries (reflex), without individual tone; height between fa^2 and fa^3, intensity weak, duration very brief (about 60 times per minute). II. *First two months.*—Inarticulate cries; appearance of the voice. Tone nasal and common to all; height between fa^2 and fa^3, intensity strong, duration less brief (about 40 times per minute). III. *From the second to the eighth month.*—Appearance of the articulate voice. Tone not yet individualised, intensity stronger, height between do^2 and do^3, duration longer (about 27 times per minute). IV. *From the eighth to the eighteenth month.*—Rapid increase in the variety of sound. Appearance of modulation, individual tone, intensity weaker, height between do^2 and do^3. V. *From the eighteenth to the twenty-fourth month.*—Larynx more consolidated, more definite sonorous qualities, height less, uncertain reproduction of some notes. Prattle sung between si^1 and mi^2. VI. *From two to three years.*—Entrance into the field of vocal extension, with possible limits re^1-la^1. Correct intonation of mi^1 and fa^1. First differentiation of the two registers. Diminution in the intensity of cries, increase in that of the singing voice. The tone becomes more and more individualised, and the first sexual difference appears. Transformation of the singing prattle into rhythmic and remotely melodic phrases. Difficult and inexact repetition of some musical phrases. VII. *From three to six years.*—Well-marked vocal extension, with possible limits la-re^2, sol-mi^2. Physiological extension of four tones for girls and five for boys. Perfect distinction between the two registers and the 'voix de passage'; chest-voice with potential maximum at fa^1 in girls, mi^1 in boys, head-voice with potential maximum at si^1 for both sexes, except between three and four years, when it is at la^1—the 'voix de passage' varying in girls about two notes (sol^1, la^1), and in boys about three (fa^1, sol^1, la^1). Increasing intensity of the singing voice, at the maximum in the sharps, weak in the bass. Tone inherent in age and sex as with children of

between two and three years of age. Individual tone more and more accentuated—general type of tone, 'chiaro,' not too harmonic. Exact repetition of songs and melodies. Musical ear well developed for enharmonic intonation.

Linguistic Sensory-Motor Periods. — Berthold Sigismund, physician, naturalist, teacher and poet, in 1856, published, under the title *Child and World* (600), a genial and suggestive account of the growth and development of his own little boy. Before he began to write he was evidently well acquainted with the folk-lore and the folk-observation of childhood, and it is to him that we owe the introduction into the literature of child-study of the term 'stupid quarter' — *das dumme Vierteljahr* (compare the Latin *infans*)—by which the Thuringian peasants designated the first three months of human existence. A keen observer of child-endeavour and actual physical and intellectual progress, Sigismund, noting the chief developmental facts involved, assigned to the child in the various stages of its growth these expressive names (the others of the list being formed by analogy with the first): 1. *Säugling* ('suckling'), the period of the first three months, when the child is seemingly stupid, and, as it were, part of the mother still. 2. *Lächling* ('little smiler'), the period in which the development of Virgil's *risu cognoscere matrem* takes place (the smile, Sigismund thought, began between the seventh and the tenth week). 3. *Sehling* ('little seer'), the period in which the organ of sight comes more or less under control, and the 'wise look' of the child really means something. 4. *Greifling* ('little gripper'), the period in which gripping and grasping (the first step, as language—German, *begreifen;* Latin, *apprehendere*—tells us, towards comprehension), and the use of the hand as a human organ develop. 5. *Läufling* ('little walker'), the period (earlier the child is *Kriechling*, 'little creeper') in which the child has learned to stand freely and to walk (according to Sigismund, the acquisition of the power to walk takes place between the end of the first year and the end of the first quarter of the second year). 6. *Sprechling* ('little speaker'), the period when the child has begun to use the most human of all man's accomplishments, and ceases to be, in the original Latin sense of the term, an *infant*, becoming speaking man.

Another classification of the epochs of childhood suggested by Sigismund is—From birth to the first smile; from smiling

to sitting; from sitting to walking; from walking to speaking; from word to sentence.

Sigismund's divisions of the periods of childhood have been practically adopted by Fritz Schultze in his evolutionistic study of 'The Child's Language' (581).

Linguistic Periods.—Kussmaul recognises three periods or stages of development in the articulation of the child: I. *The period of primitive sounds*—sounds of a 'wild,' reflex sort, in all sorts of loose and chance successions and combinations; some the regular sounds of the alphabet, other of a much more difficult sort, reminding one of certain sounds in modern folk-speech and the tongues of savage peoples (*pfi*, *fbu*, *tl*, *dsi*, *qr*, etc.). These sounds are the product of the muscle-instinct of the child, like its hand-clapping, its leg-kicking and other seemingly aimless exertions. There is a joyance of babbling fully equal to any joyance of movement the infant can feel. II. *The imitative period*, beginning in some children before the end of the first year, in others not clearly noticeable till well on into the second year, or even later. Here the language of the child's environment makes its influence felt, and the 'wildness' of its former artless babble is shaped (when the child is capable of listening and distinguishing tones) into something like the commonly used sounds of its elders. The *a*, *aa*, *ho*, *u*, natural interjections, have now added to them *baba*, *dada*, *dodo*, *atta*, *papa*, *mama*, *bebe*, etc., words to which, however, much haziness of meaning long attaches. During this period the first awakening of the musical sense causes the child to give utterance to uncounted repetitions of his favourite words, and at the same time the words used by him shape themselves more and more to the phonetics of those about him, and less of the parent's divining instinct is needed to interpret their significations. III. *The period of thought-expression.* Here the child is busied with the connection of word and idea, the change from mere onomatopœia and interjection to the real speech-word (342, p. 46).

Such periods as these, however, as Gutzmann points out (260, p. 12), are not always sharply indicated; some highly-gifted children at the age of three years hardly speak at all, while undoubted idiots are sometimes characterised by a perfect stream of babble. Perhaps there is no inconsiderable difference in the individual abilities of children to hear their own sounds, and the pleasure-element resulting from play with

the voice is subject to wide variations. Hence, also, variation in the power and scope of imitation, for which the child finds preparation in listening to itself, as well as to others at a later period. Though the difficulties of imitation are very great, the child profits by his good powers of observation, and often makes surprising advances; but no fixed conclusion as to the intelligence of the young human being can be drawn from the observation of a few peculiarities of speech and their development. Not alone 'baby-talk,' on the part of parents and nurses, may, grace to the child's amazing talent for imitation, do his growing speech serious injury, but also forced attempts at hurrying on his language, especially where any defects of speech are present in the persons of his immediate environment. Another possible cause of injury is the interference of parents and nurses with the child's babble and play-talk; and at an opposite pole from the lullaby, which is so similar all over the world, we have the noise and din of the schoolroom, which to the ear-learning child means much of evil, the tone of voice and speech-action being often very much affected, while a very large percentage of stuttering and like disturbances of language is directly traceable to the contamination of the school, the greater family. Nor can the use of language in childhood serve as a sure criterion of intelligence, for it has not seldom happened that in the same family a child of five years, though quite as intelligent as his brother or sister, has, so far as the proper and skilful handling of speech is concerned, lagged behind one of three, and, if Gutzmann's view is correct, children tend normally to speak late and to walk late, contrary to a current popular opinion.

Dr W. Oltuszewski, of Warsaw, in his discussion of the mental and linguistic development of the child (462, p. 30), distinguishes three periods in the development of child-language: 1. *Primitive period*—epoch of individual sounds and mute language, preceding the developmental period *per se*. This period is characterised by the reflex and pain phenomena of the primitive sounds, especially the vowels, dependent upon the innate capacity of the articulatory organs to function, and have nothing to do with the memory-centres of language, which develop considerably later; also by pantomime, gesture and mimic movements, which at this period belong to the instinctive reflexes, and not, as later, to the imitation movements—these are the child's original language, expressing

his feelings, impressions, excitations, etc., long before the real language-centres have been formed. 2. *Period of the development of the linguistic memory-centres.* First to develop is the hearing-memory, then the motor (apprehension, repetition). 3. *Period of association of ideas with words.* (Independent language.)

Egger recognises three periods in the development of the language of the child (181, p. 32): 1. *Instinctive, natural language.* A stage of speech common to all times and all peoples, which is gradually restricted by the progress of the next linguistic stage. 2. *Artificial language.* Peculiar to each child, useful for communication with other children, and, especially with nurses and parents, a form of speech which never rises to the dignity of the language of a people, or even of a family. 3. *Family, national language.* This form of speech gradually supersedes the artificial language, just as the latter did the instinctive signs, and even more completely.

Some investigators have gone into considerable detail and recorded many interesting facts missed by less patient inquirers. Thus Dr Allaire, whose conclusions are based upon daily observations during several years of the development of his own children, distinguishes in the growth of the rudiments of infantile speech the following periods, the limits of which are not inevitably fixed, but may vary according to 'native weakness, suffering, disease and sickness, heredity, the conformation of the diverse parts of the laryngeal apparatus and of the organs of hearing, and, besides, according to the presence of other children, who become real teachers' (2, p. 485):—

I. *Periods of Cries and Mute Movements of Suction.*—About coeval with the first week of life. This period is characterised in storm and stress by the disordered cries and movements, which, as Ambroise Paré says, accompany the entrance of the child 'into the calamities of human life,' and in its calm by the rapprochement of the lips in mute suction, the result of unconscious desire and an empty and hungry stomach.

II. *Period of the Formation of the Sound* A *and of the Birth of Musical Song.*—Synchronous with the second week of life. During this period the physiognomy continues impassable, although, under the influences of environments, the sense organs are beginning to function; the movements are still disordered, but the cries have already become more varied and more expressive, as waking moments show; the suction move-

ments are still mute, but the child already repeats and sings, a very gentle sound produced by the opening of the mouth and simple expiration, the sound *a*, which Scaliger called *prima notissamaque infantis vox.*

III. *Period of Transformation of Mute Suction Movements into Labial Noises.*—Corresponds to the third and fourth weeks of life. During this period the physiognomy becomes animated and the cries are modified in tone and timbre; 'the lip movements are no longer mute, the suctions changing to a labial noise (not spontaneous as Taine believes), which can be rendered by *b*, *m*, or some intermediary sound; sometimes the child, giving itself up to a sort of tasting, utters from time to time the nasal sound *nja*, *nja;* the *a* is modulated more and more, and there arises a prattling, a sort of song formed by the breath, the expiration of this glottal sound is sometimes modified to *e*, or nasalised to *an.*' We have here 'the *a* of lacteal drunkenness, determined by the repletion of the stomach.' It is with reference to this period that we may say in the words of Persius, which Paré cites: *Magister artis ingenique largitor Venter, negatas artifex sequi voces* ('the stomach, *i.e.*, hunger, is the master of art and the dispenser of genius, skilful to supply an eloquence which nature had denied.)

IV. *Period of the Formation of Labial, Guttural and Nasal Articulations.*—Corresponding to the second month of life. During this period the features of the child are lighted up more and more under the influence of the more complete development of the organs of sense and new-born smiles and tears; 'the cries no longer indicate merely sufferings and needs, but indicate rather clearly desires and wishes, and, moreover, serve to nourish the laryngeal muscles, for which inaction would be injurious; the movements are abrupt, rapid, especially when the child manifests its will, or evinces a great satisfaction; the lip movements can be heard as *b*, *m*, *p*, and combine soon with the glottal sound *a*, to form *ba*, *ma*, *pa;* the soft labial *b* and the labio-nasal *m*, which, at first, were only sketched, are no longer confused, and the strong labial *p* (following always *b*) seems to indicate more especially repletion of the stomach.' At intervals nasals are emitted, but perhaps 'the most important characteristic of this period is the formation of guttural sounds, more or less sung, when the child, filled with milk, shows his happiness by vibrations of the throat and the tongue, *i.e.*, by a succession of *gna*, *ka*, *ra*, and

especially of the Arabian *rha*. The gutturals come after the labials and the labio-nasals.

V. *Period of the Formation of Dental Articulations.*—Lasting from the end of the second to the end of the sixth month of life. During this period 'the child's features assume a real expression, the vagueness and indecision in the look disappears and the organs of sense function somewhat regularly; the movements (rather more co-ordinated) become true means of expression, like cries, laughter, tears, silence itself accompanied or not by contractions of the frontal, the muscle of astonishment, surprise and admiration, and at the moment of waking the desire to play is easily read off.' The musical song becomes more frequent and 'the child utters ballads at the moon or the rising light, or gives voice to complaints which sometimes terminate in a languishing *ma, na, ma.*' Towards the end of this period the repertory of the articulate voice is enriched by the soft dental *d* and the strong dental *t*, which at once combine with *a* to form *da* and *ta*—the emission of these sounds seeming to occur at the epoch of salivation preceding the dental eruption, or during the teething. All these monosyllabic sounds—'the primitive roots of human nature' de Brosse styled them—are repeated to satiety in the form of beads (if one can so express oneself), *ma, ma, ma, ma; pa, pa, pa, pa*, etc.

VI. *Period of the Formation of the First Words.*—Corresponding to the last six months of the first year of life. This period 'is marked by the clear manifestation of intellectual life, which has begun with the gradual development of the senses'; the child hears and listens, looks and sees, his fingers exercise better their tactile functions, his movements are more rapid and expressive and become real gestures, his cries are more sung, especially when he feels the immoderate necessity of imitating the words he hears. In this period also 'the diverse parts of the laryngeal apparatus having acquired strength, vigour, and a certain habit of imitation, with the aid of the brain cells, the child begins to form true dissyllables; the *ma* and *pa* for example, which had become *amama, apapa, mamama, papapa*, change to *mama, maman, papa*, etc., the articulate sounds gaining in strength and clearness what they lose in quantity, till, towards the end of the first year, appear the first words (in the real acceptation of the term), *mama, papa*, in which thought and expression are associated.'

The alphabet of the child a year old, according to Dr Allaire, would contain the following letters, given in the order of their appearance: *a* (modified sometimes to *e*, or nasalised to *an*); the labio-nasal *m*, the labials *b*, *p*, and the nasal *n*; the gutturals, *g*, *k*, *r*, *rh* (Arabian); the dentals, *d*, *t*. It is only later in life that the child utters the vowels *i*, *o*, *u*, the labials *f*, *v*, the lingual *e*, and the sibilant *s*. The evolution of the beginnings of infant speech is very slow, physical needs and stomachal contentment giving place gradually to self-imitation aud the influences of the personal *milieu*. Dr Allaire, however, mars a little, perhaps, his excellent paper, when, referring to the fact (cited by Dr E. B. Tylor) that certain Australian tribes have one word, *mamman*, for 'father' and for 'big toe,' he asks whether the analogy cannot be understood by remembering that 'the child, as if he were still influenced by the attitudes of his fœtal life, acquires very early the habit of playing with his feet or with his big toes, singing *ma, ama*.' It is more than likely that to the Australian, as to other primitive peoples, the big toe is 'the father of the foot.' Further details on these topics will be found in the chapter on language.

Even the mortality statistics of childhood and manhood furnish evidences of epochism and periodicity.

General Periodicity.—Siegert, in his 'Periodicity in the Nature of the Child,' has discussed and sought to interpret the constant flux and reflux which seems to characterise childhood. Growth is rhythmic, bodily and mentally, in the large and in the small; day, night, week, month, season, year, have all their progressive and regressive phases, variations, which gradually decrease in extent and frequency, occurring till the goal is reached and the permanent appears. Every form of growth and of activity knows these variations, and the good child is sometimes bad for a while; the intelligent child stupid; the neat and orderly, dirty and untidy; the strong, weak; the truthful, lying; the healthy and active, lazy and moody; the 'numskull,' bright; the mere memoriser, creative; the imitator, capable of independent thinking; the great eater, fasting; the scholar, athletic; the radical, conservative; the optimist, pessimistic; the merry, sad; the high-spirited, depressed. The general conclusions at which the author arrives are as follows (596, p. 35):—

1. In every child the periodicity of development manifests

itself in peculiar form. 2. The development of the whole body as well as of each individual organ takes place with the continual alternation of activity and rest (passivity). 3. To every intensive intellectual advance corresponds a retrogression in corporeal relation and *vice versâ*. 4. The strong advance of one intellectual activity carries with it a corresponding depression of other intellectual activities. Especially does the mental development need the alternation of productive work and receptive work. 5. External and internal causes hasten or retard the periodical recurrence of action and reaction—the greater the advance in the moment of action the greater the relapse in the moment of reaction.

Children ought, therefore, to be educated in accordance with this law of periodical recurrence, of action and reaction, of alternate corporeal and intellectual exercise, of productivity and receptivity, of stimulation and fatigue, of exaltation and depression, which dominates their entire development. Education ought to respect two things, individuality and periodicity, and to know that every individuality is *sui generis* in its periodicity. The school must recognise the flux and the reflux, which are perfectly normal and natural in childhood, and seek to work harmoniously with the individual and the social, the internal and the external factors which produce and control them. The first year of school life, the period between the third and fourth, and that between the sixth and seventh, are epochs in which both intellectual and corporeal regression seems to occur, and a regression greater than that which is to be normally expected according to the traditions of periodicity. At these times intensive reaction is stamped upon the children (fatigue, dulness, carelessness of all sorts, slovenliness, etc.), of which not a little may be due to the overburdening occasioned by the school life. The schoolroom ought never to be without the motto cited from Landor: 'In every child there are many children; but coming forth year after year, each somewhat like and somewhat varying.'

Old Age—'Second Childhood.'—Most of the proverbs and folk-sayings in which childhood and old age are compared assert a resemblance in the weakness, silliness, helplessness, etc., of these two periods of human existence. The saying, 'once a man and twice a child,' common in some form or other to most languages, expresses a widespread belief in the similarity of the latter end of man to his first beginning. The

Zuñi Indians, in their wonderful cosmogonic story, as recorded by Mr Cushing,[1] have stated the parallel on a very physiological basis :—

'Behold ! And we may now see why like new-born children are the very aged; childish withal — *á-ya-vwi* [dangerously susceptible, tender, delicate]—not only toothless too, but also sure to die of diarrhœa if they eat ever so little save the soft parts and broths of cooked food. For are not the babes new-come from the *Shi-u-na* (hazy, steam-growing) world; and are not the aged about to enter the *Shi-po-lo-a* (mist-enshrouded) world, where cooked food unconsumed is never needed by the fully dead?' The reason for this is detailed at great length in Zuñi legends.

The theory of the 'second childhood' of man has also found a somewhat firm lodgment in science, in the shape of the doctrine of 'involution,' according to which there is in old age a general decay and weakening of the physiological functions. This causes the aged to resemble or to simulate in certain respects the child, whose evolution has not proceeded very far. Psychiatrists point out that the failure of age begins at the top, and we have the 'childishness' of old men and women; the psychologist notes the force of instinct in the old which brings them near to the child; the biologists record the defects of movement and carriage in old age, which recall the beginnings of these human arts in childhood; and the physiologist recognises in the old a return of the body and its parts in some particulars to the condition of the child.

Age-changes.—Some of the more noteworthy changes which the human body and its organs undergo with the process of age are contained in the following table, which is based upon the data in the paper of G. Delaunay (155) :—

Character.	Change.
Individuals generally .	differ most from one another at about 45 years, the culmination of evolution
Race	anatomical and physiological differences much more marked in adult age
Sex	as to nutrition, muscular strength, intelligence, etc., men differ most from women between 45-50

[1] *Journ. Amer. Folk-Lore*, V. p. 56.

Character.	Change.
Constitution	constitutional differences are most marked among adults, where we meet with very strong, strong, medium, weak
Bilateralism	the two sides of the body differ most in adults, much less in childhood and age
General characters	increase in difference up to 45, and then gradually decrease after 50
Quantity of blood	increases from infancy to adult age, then decreases
Density of blood	,, ,, ,,
Quantity of hæmoglobin	,, ,, ,,
Number of red corpuscles	,, ,, ,,
Number of white corpuscles	diminishes from childhood to adult age, then increases
Proportion of water in blood	,, ,, ,,
Proportion of mineral matter in osseous system	increases up to 45 years, then decreases
Organic matter	decreases up to 45 years, then increases
Proportion of carbonate of lime	increases up to 45 years, then decreases
Phosphate of lime	decreases up to 45 years, then increases
Colour of hair	darkens from childhood to adult age
Form of hair	curly hair changes to straight
Heart	increases
Lungs	increase
Brain	increases
Thymus	decreases
Thyroid gland	decreases
Kidneys	decrease
Suprarenal capsules	decrease
Foot	changes from flat and long to short and arched
Frequency of meals	decreases from childhood to adult age, then increases
Amount of food consumed	increases to adult age, then decreases
Pulse	changes from frequent and feeble in childhood to rarer and strong in adult, then in old age becomes frequent and weak again
Respiration	less frequent from childhood to adult age, then more frequent
Oxygen	absorption increases from childhood to adult age, then decreases
Carbonic acid	excretion increases from childhood to adult age, then decreases

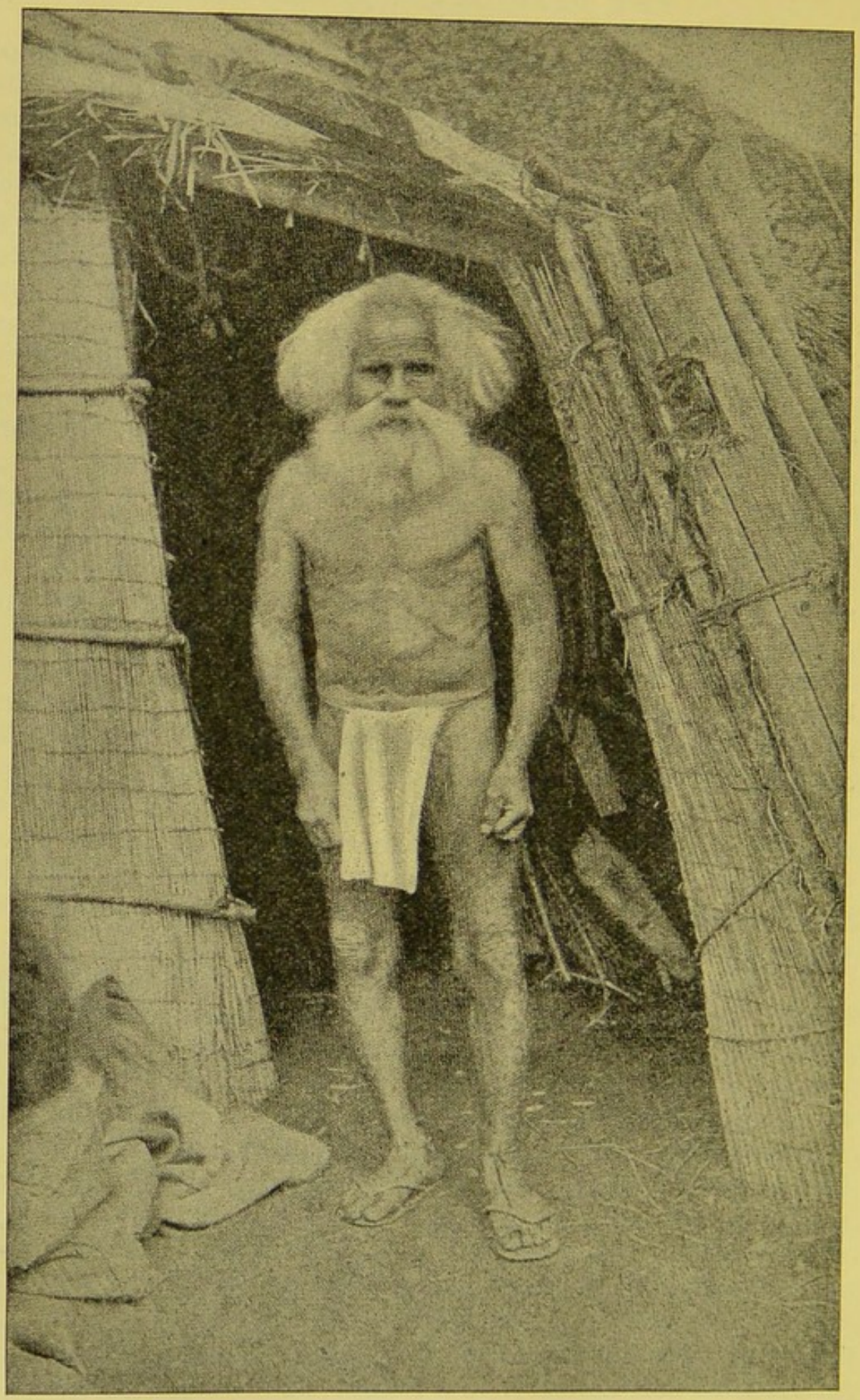
Character.	Change.
Fecundity of woman	diminishes after 25 years
Weight of children	increases until mother has reached 40 years
Movements	change from centripetal to centrifugal
Writing	first from right to left, then *vice versâ*
Voice	changes from acuity to gravity up to 50 years, and after 60 from gravity to acuity
Intelligence	increase from brute to intelligence up to 50 years, and after 60 descent towards imbecility
Morals	increase from vice to virtue up to 50 years, and after 60 descent towards vice
Fear	from fear to courage
Appearance of organs and functions	first the lower, then the higher
Disappearance of organs and functions	first the higher, then the lower
Vegetative functions	appear early, disappear late
Animal functions	appear later, disappear earlier
Higher faculties of mind	appear between 25-30, and often diminish after 50
Lower faculties	appear twice (childhood and old age), have two maxima
Higher faculties	appear once, have only one maximum in adult age

M. Delaunay notes also that, being comparatively the highest, each faculty is dominant at the time of its appearance, yielding only to the appearance of some higher faculty that is dominant in like manner, and sometimes being completely annihilated by the latter. We can, perhaps, explain in this way the disappearance in the adult of certain things (*e.g.*, gluttony, idleness, lust, etc.) which characterise childhood and adolescence on the one hand, and, on the other, the reappearance, with the disappearance of the higher faculties and the recrudescence of the lower, of the vices of the adolescent in the old man, who 'ends by "falling into childhood."' What is said of faculties seems also to apply to their products, hence 'the memory of a language learned at the age of four years, and afterwards forgotten, returns to the old man during the last years of his life.'

But there is another side to the question of old age. It is not by any means altogether undoing, involution, devolution.

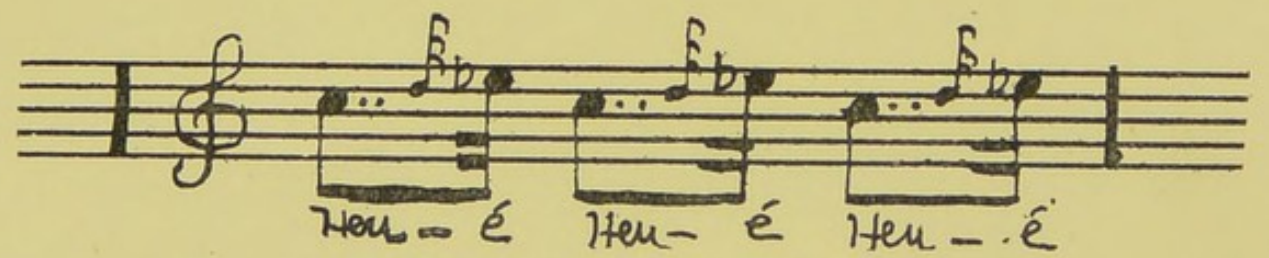
The folk-praise of the wisdom of old age, the fashioning of the senator out of the senex, and of the oracle out of the aged woman, have not been completely baseless, and science may go more than one step in the direction of justifying the peoples of all times and of all races who selected from the ranks of the old men and women their historians and teachers, their leaders and advisers, their prophets, seers and priests. There is, in a sense, a golden age of old age; and old age, like childhood, sometimes touches on divinity, an aspect of it which eclipses all the morbid and phylogenetically degenerative characteristics of this time of the life of the individual, not a few of which, *senile dementia*, *e.g.*, are of complex origin, while the physical or somatic origin of other ailments and affections, generally attributed to old age *per se*, is very probable, as Dr Scott notes in his recent study of old age and death (583, p. 80). We are in need of just such an investigation of old age and its phenomena, as the 'child-study' movement, an investigation that shall put old age in its true phylogenetic and ontogenetic setting, and emphasise its *rôle* in the individual and racial life of man. And it is possibly by no accident that the Chinese, one of the most child-like of all peoples, have utilised so well, and recognised so remarkably, the value and wisdom of the old. From them might have come the definition given by Brinton—'The sage is he whose life is a consistent whole, and who carries out in his age the plans which he laid in youth' (78, p. 75).

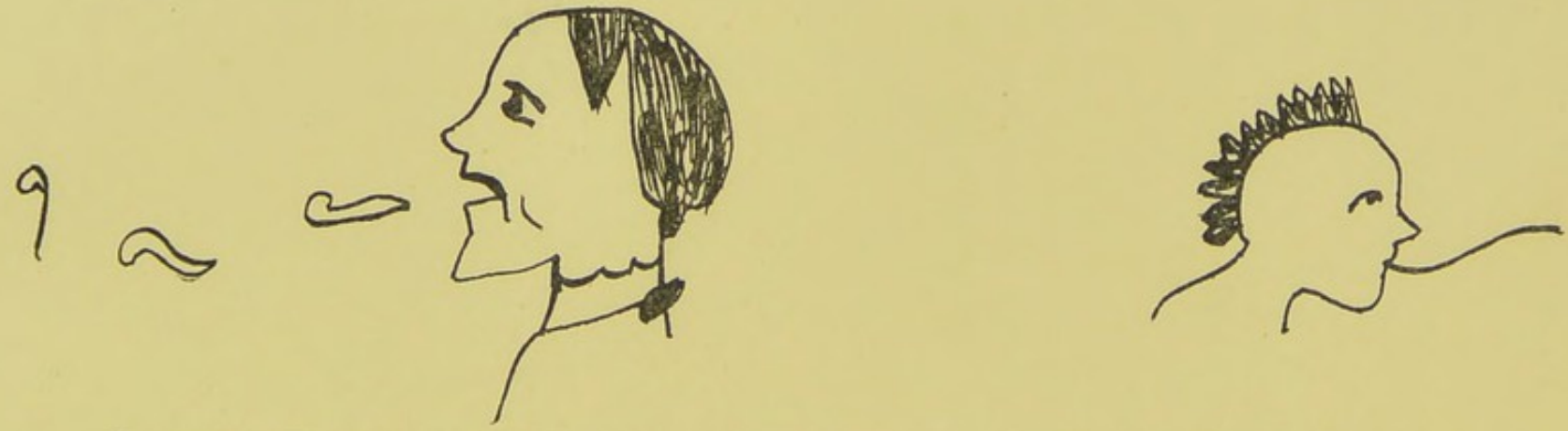
Just as in childhood naïve wisdom proves that the brain and its associate organs are not altogether functionless, even in the highest sense, so, in old age, the clear judgment and perfect control of the higher mental faculties, which so often characterise the aged, centenarians even, justify the statement that the cerebral organ is the last to decay, except under pathological or abnormal conditions. This is confirmed by Humphrey's study of 900 cases on record of extreme old age (310, p. 24, p. 28), and, as Dr Scott remarks, 'in green old age (*âge de retour*) there can hardly be any doubt that the intellectual qualities are even relatively improved' (538, p. 79). The connection of longevity with the intellectual and cognate professions acts almost like a natural selection, and secures to the race an elected and reasoned service on the part of the sane and healthy aged that can only be compared with the



'GREEN OLD AGE' AMONG THE AINU OF JAPAN.
(From *Rep. U.S. Nat. Mus.*, 1890.)

instinctive devotion of early maturity, or the enthusiasm of childhood. In old age, the individual as such, in his ontogenetic right, can serve the race with real distinction, for, to use the words of Dr Scott, 'old age is really the test of life from an individual standpoint,' and 'it is the race life that is normally the source of our greatest force and happiness, and old age is only successful when it has so absorbed this life that its more intellectual service becomes its deepest motive and highest happiness' (538, p. 85).

Sometime, with the increase of health, peace, and other conditions which favour longevity, and the prevalence, to a much greater extent than the hurry, bustle and youthful ambition of the day permit as yet, of 'green old age,' this true 'second childhood' of the individual may become consciously beneficial intellectually to the race, as has been the first childhood unconsciously.

INFANTILE CRY, THE ORIGIN OF SPEECH.
(From Wilson, 687, p. 516.)



PRIMITIVE REPRESENTATIONS OF SPEECH—ANCIENT MEXICAN AND MODERN OJIBWA.
(From *Rep. Bur. Ethnol.*, 1889-90.)

CHAPTER V

THE LANGUAGE OF CHILDHOOD

Sign Language.—Degerando's treatise on the education of deaf-mutes (153), although published in 1847, contains many very valuable and interesting thoughts concerning the origin and development of human speech, not alone with respect to those unfortunate beings who, up to the sixteenth century, were hardly deemed susceptible of any education at all, whose attempted instruction was more than once placed under the ban of theology, and whom the Roman Law, up to the time of Justinian, saw fit to ignore, but concerning the language acquisition of normal children as well. According to Degerando, 'the mother tongue is learned from the cradle, without art, by the sole effect of the circumstances in which the child finds himself situated; he does not know how he learned it; the spectators have not remarked it, and the philosophers have not inquired about it' (153, I. p. 12); indeed, it furnishes a notable example of the fact that 'we are generally not astonished at the really marvellous-in-itself, but at that which is beyond the circle of our habits.' The author emphasises the importance of the mother as the first nurse, and the first teacher of the child, and notes how 'the mother really, and the nurse as well, plays the *rôle* of teacher, almost without knowing it, at least without method, design or art' (153, I. p. 33). Custom is the great shaper of the child in matters of language, and he has a kind of instinct to receive, 'profiting by what is said for him, and by what is said in his presence.' In spoken language the little child learns rather by sight than by hearing, and his vocabulary grows by the constant association of some word of mouth with the language of his feelings, expression of the eyes, features of the face, sound of the voice, caresses, cares, etc. Degerando notes that 'the child of the rich understands more words and less actions, the

child of the poor less words and more actions,' this being the reflex of the environment. Of imitation he remarks: 'The faculty of imitation, accompanied by an instinctive need, a secret pleasure, is a faculty that seems to predominate above all in infancy, as it does, in general, at the first period of intellectual development' (153, I. p. 42). The presence of children of about its own age leads the child to set up a regular commerce of words, while with those a little younger than himself he becomes a play-teacher of language; often their discourse is singularly elliptical, they do not express themselves by general ideas, but by vague, confused, incomplete images, and they are especially apt to be deceived by figurative expressions, which they take in all their literalness.

When it comes to instruction, 'children are still rather the pupils of circumstances,' and with reading they enter a new world. In writing—'picturing language'—the child 'speaks quite low, as if he spoke to someone'; when he reads, he 'repeats quite low the corresponding words, as if he were listening to someone—the words of the articulate language, both in writing and in reading, being retraced, at least in imagination' (153, I. p. 59).

It was formerly believed that deaf-mutes needed 'to be given a soul,' but, as Degerando points out (153, II. p. 70), 'the deaf-mute takes refuge in the inexhaustible fecundity of human ideas, and creates a language of his own—rich, expressive, eloquent even, eminently picturesque—the language of action, pantomime,' in which analogy and the social factor play their appropriate parts. The deaf-mute has ideas for which he has no words, but no expressions devoid of sense. The sign-language of deaf-mutes has its reduction signs corresponding to the action-language of primitive man, and these 'find their etymology in the primitive picture of which it is the abbreviation. Deaf-mute language can be original, mobile, individual, created at every moment by circumstances, and possessed of purely arbitrary and conventional signs;' but Degerando exaggerates, perhaps, when he declares that 'this naïve original language paints with perfect truth the first operations of human intelligence' (153, II. p. 97). There does seem to be a difference, occasionally, at least, between the deaf-mute child's signs (and the normal child's) to his parents, brothers and sisters, other children, etc., and those of deaf-mutes taught together, and individuality of temperament and nature, here, as else-

where, is an important factor, as Degerando illustrates from Arnemann's 'Observations on Deaf-Mutes,' published at Berlin in 1799, the only work of the time in which the sign-language of the deaf-mutes is recorded, and by numerous sign-lists of his own observation. The signs by which Arnemann was known to five pupils, who successively entered the institution, were as follows: (1) indication of a plaster on the neck (which he had when he came first); (2) taking off the hat; (3) tallness; (4) supporting left hand on hip (a mannerism); (5) drawing index finger down nose (he had a straight nose). Noting the 'greater perspicacity of the organs of sense with savages,' Degerando remarks that 'vivacity of sensations in itself contributes really little to knowledge'; but languages of all sorts, natural and artificial, multiply indefinitely our ideas, for 'he who sees that he has comprehended his fellow, and knows that he has been understood by him, in his turn will create an art to make himself forever better understood' (153, II. 167). In this man differs very much from the lower animals, it being true, in a sense, that 'man understands the animal, but the animal does not understand man.' The various stages in the language of action, which is closely related to drawing—is really drawing—are thus outlined by Degerando: 1. No art; 2. art; 3. auxiliary art (used by actors, orators, etc.); 4. convention. Very interesting is the statement of Eschke, made in 1799, that 'deaf-mutes learn most easily Russian, Polish and English; the hardest languages being Spanish, Portuguese, French, and especially German.'

Gesture and Expression in Dramatic Art.—In connection with the racial and individual peculiarities in the language of action, suggested by Degerando's observation, Mantegazza's study of the 'Scientific Canons of Dramatic Art' is of value. By gesture Mantegazza understands 'those muscular movements which are not absolutely necessary to complete a psychic work or function, but accompany it by sympathy of influence.' We do not teach infants to laugh, to cry, or even to gesture (angrily or pleasantly), and still less than all children do all races weep, laugh and gesture exactly alike. In all they are and all they do (and the actor who seeks to reproduce them must be 'an artist rather than a mere photographer') members of each human race have something strikingly characteristic. The Italian is æsthetically serene; the Frenchman ready to leap; the German filled with the thought that is whirling in

his brain; the Englishman's characteristics are contempt and energy; the Spaniard's, calm and voluptuous arrogance. The Italian is an artist in speech and movement; the Frenchman a vivacious pleasure-seeker; the German a slow-moving philosopher; the Englishman, a German without *bonhomie;* the Spaniard an Italian orientalised. These are the peculiarities which limit the actor (and all children are very early in life actors) in the search for the 'true beautiful,' the expression of which is beyond that of the true. Not even stopped ears and a silent tongue can utterly suppress these age-old race temperaments and race characteristics which play their *rôle* in the evolution and variation of sign-speech.

Gestures of Primitive Peoples.—Darwin, in his study of the expression of the emotions in man and animals, after noting the fact that many of the physical indications and expressions of laughter, fear, suffering, rage, anger, love and pleasure do not characterise man exclusively, but were pre-human, being found in various lower animals of widely different races, came to the conclusion that 'the same state of mind is expressed throughout the world with remarkable uniformity, and this fact is in itself interesting as evidence of the close similarity of bodily structure and mental disposition of all the races of mankind.' Nevertheless, there is diversity in this unity. Dr Max Bartels (after Vaughan Stevens) has investigated the emotional gestures of the Orang Hûtan, a very primitive people of Malacca, with reference to the syllabus employed by Darwin in his researches, with the result of developing the existence of not a few differences between the two tribes of the Belenda and the Meneek (to say nothing of the other adjacent peoples) in the most elementary gestures. While, *e.g.*, the Belenda express astonishment by opening wide the mouth and eyes and lifting the eyebrows, wrinkle the skin about the eyes when making a careful examination or trying to understand a difficult thing, shrug the shoulders to express inability to carry out something, the Meneek seemingly do not employ these gestures. Moreover, differences exist among the women and children also, and several of the modes of expression in Darwin's list appear to be unknown to both tribes, *e.g.*, the balling of the fists in anger, laughter to tears, a 'guilty look.' In great fear the children of the Belenda act almost as Europeans. The children of the Meneek, however, are very quiet; the Belenda men run away silently, the women scream as they

dash off, while the Meneek men sit down quietly. We learn, too, the curious fact that, 'in the presence of strange Europeans, the Orang Hûtan banish every expression out of their face, and take on the appearance of almost idiotic stupidity, in order thus to conceal their real thoughts' (39, p. 270).

Sign-Language of Primitive Peoples, Children, etc. — As Degerando points out (153, II. p. 193), Dr Samuel Akerly, in a paper, 'Observations on the Language of Signs,' read before the New York Lyceum of Natural History, January 23, 1823, was about the first to study comparatively the sign-language of deaf-mutes and the sign-language of a primitive people—certain Indians of North America. Besides noting the remarkable closeness in the rendering of the ideas, *drink*, *sleep*, *eat*, *truth*, *lie*, *good*, *pretty*, by deaf-mutes and by Indians, Dr Akerly observes that 'the art of analysis is carried further with savages'—whereas reduction seemed to be the one art of deaf-mute sign-language.

The most noteworthy contribution to this topic, however, is Colonel Garrick Mallery's exhaustive essay on 'Sign-Language among North American Indians, compared with that among other Peoples and Deaf-Mutes' (393), published in 1881 by the Bureau of Ethnology at Washington. The subject of gesture is treated in all its aspects, among animals, in young children, in persons afflicted with mental disorders, among uninstructed deaf-mutes and deaf-mutes who have been taught, among low tribes of man, with the ignorant classes of civilised races, with the blind, with those of a stammering tongue, and with orators, but chiefly as evidenced among the various tribes of North American aborigines. It is absence of sufficient brain power, the author seems to believe, that keeps certain of the lower animals from true speech, otherwise the dog would turn into words many of his apt gestures, and the wonderful imitation of the parrot would turn to significance. In the course of his long companionship with man, the dog has invented not a few signs which man has come to understand, and not a few other animals may be said to illustrate the fact that the brute creation understands man's gesture better than his normal, unexcited, low speech.

With young children a small number of words is often (but not always) associated with a very large number of gestures and facial expressions. The child's gestures may be said to become intelligent long in advance of his speech, and

undoubtedly he invents signs as well as words. In certain forms of mental disorder, the simpler, older language of signs seems to be intelligible, or to survive after spoken or written speech has ceased to be understood. Thus the insane will often obey gestures when words are of no avail, the aphasic subject will hardly let go his ejaculations and his gestures. Congenital deaf-mutes, Colonel Mallery thinks, will first make signs of the same sort as normal children of the same age, and he accredits to the blind (Laura Bridgeman and Cardinal Wiseman's blind Italian) an innate power of development of gesture (facial and otherwise) which their affliction fails to suppress.

The low tribes of men are not to be exactly paralleled with the ignorant and lower classes of civilised races and communities, for with the former sign-language is not such a necessity always, since quite often, even with very primitive peoples (the study of the North American Indian, *e.g.*, shows that the existence of a copious language of signs does not necessarily mean a meagre vocabulary), the development of oral language is very great. It is to the ignorant more than to the primitive part of mankind that Volumnia's advice to Coriolanus applies—'Action is eloquence, and the eyes of the ignorant more learned than the ears,' a statement which Colonel Mallery paraphrases thus—'The hands of the ignorant are more eloquent than their tongues.' Even among the educated and the intelligent the stammerer, through necessity, and the man of eloquence, through excess energy, are frequent users of gesture. Gesture-speech was once of great extent and profound importance in all parts of the world, for, as Colonel Mallery remarks (393, p. 284): 'With voice man imitated a few sounds of nature, with gesture actions, positions, forms, dimensions, directions, distances and their derivations.' In fact, 'oral speech remained rudimentary long after gesture had become an art.' Both in the childhood of the race and in the childhood of the individual the study of sign-language is an important aid to comparative philology, the action-etymology of the Latin *imbecillus* being no less intelligible to a Cheyenne Indian than to an ancient Roman. While Colonel Mallery gives many interesting examples of the frequent interchange of conversation and story by deaf-mutes and Indians with their systems of gesture-speech, he by no means holds these to be identical, but rather different dialects

of the gesture-language of mankind. Tylor's statement that 'gesture-language is substantially the same all over the world' must, he says, be modified to signify generic uniformity with specific varieties, for gesture-speech, like any other human art, does not always employ the same signs for the same ideas, but rejoices often in a manifold variety of expression.

Miss Paola Lombroso calls attention to the fact that, while their elders take all sorts of pains to teach the young child words, little or no effort is made to help or to instruct it in the use of gesture-language, which for the young human being, as for primitive man, is, at first, the nature mode of expressing needs and feelings (369, p. 4). The author considers that 'the gesture of negation springs from the natural way the child has of removing his head laterally from the breast when he no longer desires milk, that of assent being derived from the infant's action in moving his head up and down when he seeks the nipple.' The gesture of protruding the lips, so as to claim attention, is attributed to the 'instinctive movement of protruding the lips in order to eat.' She adopts Preyer's explanation of the joining of the hands when requesting anything, 'because in the act of prehension the hands are extended, and, in order to take the object desired, surround it, and are united.' The child uses gesture first to express his thoughts and feelings, because it is at the same time the quickest and the least fatiguing method, and, 'when later he abandons gesture for speech, it is as a matter of economy (through the law of least effort), because the words we have continually used in his presence and hearing have become familiar to him, and he is now able, by their means, to express with greater ease and precision a large number of facts and sensations' (369, p. 170). Much later in life many individuals for the same reason adopt written language as the means of expressing themselves best and most satisfactorily. Some few others, more highly favoured, find in poetry alone the needed channel in which their thought can most freely and securely flow; and, again, genius has often selected some special form of poetry whereby to picture forth its thoughts and its dreams.

Onomatopœia and the Origin of Language.—The speech of little children has always been a source of wonderment to man, and Psammetichus, King of Egypt (d. 610 B.C.), was not the only investigator who turned to childhood for the solution

of the problem of language origins. Psammetichus, so Herodotus tells us, came to the conclusion that the oldest language on the face of the earth was the Phrygian, because two children, isolated by his orders, spoke first the word *bekos*, which in that tongue signified 'bread.' Farrar, who accepts the story, says that *bekos* (minus the Greek *-os*) is merely a child's onomatopœic rendering of the bleating of a goat, which, indeed, is possible, since the children were under the care of a shepherd. We may here, Farrar thinks, find the record of two very interesting facts, viz., 'that the children first named animals, and that the name given was onomatopœic or imitative of the sounds uttered by the creature named.' Long after the Egyptian's experiment we have mention of similar, but somewhat discredited, investigations by Frederick II. (1194-1250) of Germany and James IV. (1473-1513) of Scotland. Whatever their authenticity may be these stories are of historical interest, as evidencing at least a suspicion that the origin and growth of child-speech stood in some relation to the development of human language (194, p. 12). A very good sketch of the onomatopœic theory of the origin of language, as set forth by various ancient and modern writers, will be found in Regnaud (530), while the evidence in its support is exhaustively treated by Canon Farrar in his *Chapters on Language* (194), in connection with which ought to be read Trumbull's brief discussion of some of these data (649), and Wedgewood's in the introduction to his *Dictionary of English Etymology* (678). Of special value are the thoroughgoing articles by Dr J. Owen Dorsey on 'Siouan Onomatopes' (173), H. T. Peck on 'Onomatopœia in Some West African Languages' (482), and Mr W. G. Aston on 'Japanese Onomatopes and the Origin of Language' (16). That onomatopœia has played a considerable part in the evolution of the earliest human forms of speech, as it now does in the language of early childhood, is doubtless true, but its importance has not always been of the first order.

Japanese Onomatopes.—Mr W. G. Aston, following up a suggestion of Dr E. B. Tylor as to the need for 'a classified collection of words with any strong claim to be self-expressive,' has, in his paper on 'Japanese Onomatopes and the Origin of Language,' studied in detail the onomatopœic element in the Japanese tongue. The conclusions at which he arrives are as follows (16, p. 352):—

1. The first speech of mankind consisted of natural cries—shouts, grunts and hisses. These were developed into interjections (Oh! No! Hush!) by a two-fold process. The ideas become more distinct and definite, and the sounds, at first differentiated only by tone, became articulate.

2. From such interjections there have been derived a very considerable proportion of the grammatical forms and particles of the Japanese language, such as case signs, honorific and interrogative particles, the signs of the indicative (?), optative conditional and imperative moods, and of the causative (?) and negative verbs. A good many words of the general vocabulary may be traced to the same origin.

3. A further stage in the development of language consists in the imitation of such non-significant vocal sounds and motions as blowing, spitting, gulping and coughing.

4. It is here that mankind found a model for the mute consonants.

5. It was also at this stage that the imitations of motions by motions of the organs of speech began.

6. In onomatopœia mute consonants are usually expressive of motion, vowels and nasals of sound, the aspirates occupying an intermediate position.

7. Ordinary onomatopes, such as rat-tat, bow-wow, etc., are of late origin, and can throw little light on the genesis of speech.

8. Letter correspondence in like onomatopes of the same or different languages follows the classification into mutes, aspirates and nasals. It is only where there is some special reason that the variations occur between sounds made by the same organ of speech as in ordinary philology.

It is quite evident that the onomatopœic words of many savage peoples are of too artificial and intellectual a sort to be compared with the few instinctive imitations of uninfluenced childhood.

Australian Onomatopœia.—That there is a great variety in the onomatopœic or imitative words of the lowest races of man—a much greater variety than can be said to exist in the early speech of the human child—is evident from a careful study of their language. In the different Australian dialects, *e.g.*, we find the following words (among others) for 'laugh': waler, krambalwert, kangalla, gooryman, kinka, tirrikeblin, munka, yie, munjur, kindi pillia, karibok, ginthinthintha, wathiman, yathin,

etc.; and among American Indian tribes the following names for the 'butterfly': tlētlū, lōlēnū, kōlílū, walwilékash, képkap, wékwak, etc.; and in Australia: billybyleukka, coolumbria, booroo booroo, balumbir, etc. So, also, there is immense variety in the words for 'yes' and 'no' among the Australian and other primitive languages, complexity being often found where least expected, and simplicity where it might not be looked for.

It is fair, however, to say that, with respect to human noises and movements especially, the Australians (and some other primitive races as well, like the Fanti) evidence great skill in onomatopœic imitation. The Dieyerie language of South Australia, *e.g.*, has many very expressive words of this sort (136, II. p. 89), such, *e.g.*, as the following:—

Apooapoo	=	Dumb.
Boonoonoo	=	Itching.
Bunyabunyina	=	Trotting pace.
Chandachanduna	=	Mimicking for the purpose of joking.
Chuboochuboo	=	A ball, played with by children.
Doomoodomoora	=	Round.
Kinka	=	Laugh.
Kookoo	=	Yes.
Koodakoodarie	=	Very crooked.
Koongarra	=	Rustling or whirring noise caused by birds rising.
Koonkana	=	A grunting noise.
Kubbou	=	Ejaculation to warn from danger.
Kulkulie	=	Slowly, gently. (Kulie=ennigh?).
Kunthakunthuna	=	Shaking.
Kurumba	=	Blaze, flame.
Kurrurrie	=	Directly.
Kurrakurrana	=	Feeling with the hands, groping in dark. Kurra=feeling.
Moonyirrie	=	Circle, current in a stream.
Mooromooroo	=	Disabled, deformed.
Munumuruna	=	Talkative, gambling.
Nillanilla	=	Mirage.
Nokooloonokoloo	=	Continually repeating, reiterating.
Nooroonooroo	=	Be quick, hasten.
Ooroooooroo	=	Hard, tough, strong.
Pirrakuna	=	Groping in any enclosed space with the hands for anything.
Piyacooduna	=	Noise caused by birds settling on land or water.
Thitti	=	Ticklish.
Thuliekirra	=	To put the tongue out of the mouth to denote that the person who does so is only jesting.
Thumpuna	=	Walking softly on tip-toe to surprise.
Thumpathumpuna	=	Walking stealthily so as not to disturb prey.
Wittcha	=	Itch.

Wittwittuna	=	Roaring of thunder.
Yelyelkaroo	=	Hysterics (with women).
Yikyillarie	=	Hysterics after excessive laughter.

Variety in Onomatopœia.—Such words partake, too, in distinct or indistinct fashion of the genius of the language to which they belong; and in such languages at least as those treated of by Dr Dorsey serve more as formative elements of the vocabulary than do, generally, the onomatopœias of children; the latter have, in fact, a species of deadness about them or a servile kind of imitation that the speech of primitive peoples often does not possess at all. There is usually more life and body to the onomatopes of savages than to those of civilised children; only in their 'original languages,' those they create for themselves, do we meet with the real correspondences of savage onomatopes. Children alone, who were capable of creating words like *bojiwassis*, 'the feeling you have just before you jump, don't you know—when you mean to jump and want to do it, and are just a little bit afraid to do it' (296, p. 108), could compete with the originators of many of the onomatopes of primitive tongues. The child is repressed by the necessity of taking on the language of his elders before he has either the opportunity or the requirement to create onomatopes like the following, cited by Dr Dorsey, from various dialects of the Siouan stock of American Indian languages: *Khá-dha*^{n}='the sound made in brushing against or pulling through sunflowers, grass or leaves'; *S+*='the sound of ice breaking up and floating off, or that of a steady rain'; *gatá-khi*='the sound heard when a tree is struck with an axe in cold weather'; *dhi-khdha*^{n}*'zhe*='the crunching sound heard when a sled is pulled over firm snow on a frosty morning.'

In the simpler sort of onomatopes: *Hu*, 'to bark like a dog or a wolf'; *s'u*, 'the sound of planing'; *K-u-*, 'the noise of a gun,' etc., the Siouan Indian is much nearer the child. With the adult civilised individual the cultivated imagination comes to the rescue—three young men, *e.g.*, asked to state what sound was suggested to them by the letter group *glab*, answered, respectively, 'Dropping of something semi-liquid,' 'croaking of a frog,' 'clapping of hands together' (109, p. 117)—though not a little of the old onomatopœic art lies dormant even here. With adults of the present day, however, the exercise of onomatopœia is interpretative rather than creative. Sir Daniel

Wilson records the following interesting observations of American Indians as to certain onomatopœias:[1] 'Oronyhateka, an educated Mohawk Indian, in replying to some queries addressed to him relative to his native language, thus writes me in reference to the *Caprimulgus vociferus* or whip-poor-will: "When I listen with my Indian ears, it seems to me utterly impossible to form any other word from an imitation of its notes than *kwa-kor-yeuh*, but when I put on my English ears I hear the bird quite distinctly saying *whip-poor-will*." Assickanack, an educated Odahwah Indian, wrote the same cry, heard nightly throughout the summer in the American forests, *wah-oo-nah;* and an Englishman, recently arrived in Canada, who listened to the cry for the first time, without being aware of the popular significance attached to it, wrote it down, at my request, *eh-poo-weh*.' The present writer, when among the Kootenays of South-Eastern British Columbia in the summer of 1891, found that, when he tried to think in the Indian language, the cry of the owl seemed to be *k'sētlkinētl pātlkē*, as the Kootenays render, but on relapsing into English it was unmistakably the familiar *tu-whit-tu-whit-tu-whu*. The whippoorwill was certainly not the first thing named by the American Indians, or the frog by the Pacific Islanders; and the fact that their language had already taken some sort of shape before these onomatœpic names were invented, more than any actual difference in the cries of the creatures themselves, must account for the different words used to name the whippoorwill, which Dr Gatschet has noted among various Indian tribes, and for the different onomatopœic names recorded by Dr Guppy as existing among the Solomon Islanders, Australians, Malays, etc.

Development of Language from the Cry.—According to V. Henri (293, p. 27), there exists, from the point of view of anatomy and physiology, 'only a quantitative difference between the language of animals and the speech of man, the latter possessing a much more extensive register and an infinitely more varied *timbre* and articulation.' The problem of the origin of language may thus be not a linguistic one, but 'a chapter of comparative anatomy (articulation) and of pure physiology (rudimentary exercise of faculty).'

Lefèvre (352, p. 42) thus sketches the development of human speech from the cry to the grammatical categories:

[1] *Preh. Man.*, 3rd Ed., Vol. II. p. 365.

'Animals possess two of the important elements of language—the spontaneous reflex cry of emotion or need, the voluntary cry of warning, threat or summons. From these two sorts of utterance, man, endowed already with a richer vocal apparatus and a more developed brain, evolved numerous varieties by means of stress, reduplication, intonation. The warning or summoning cry, the germ of the demonstrative roots, is the parent of the names of numbers, sex and distance; the emotional cry, of which our simple interjections are but the relics, in combination with the demonstratives, prepares the outlines of the sentence, and already represents the verb and the names of states or actions. Imitation, direct or symbolical, and necessarily only approximative of the sounds of external nature, *i.e.*, onomatopœia, furnished the elements of the attributive roots, from which arise the names of objects, special verbs and their derivatives. Analogy and metaphor complete the vocabulary, applying to the objects discerned by touch, sight, smell and taste qualifying adjectives derived from onomatopœia. Reason then coming into play rejects the greater part of this unmanageable wealth, and adopts a certain number of sounds which have already been reduced to a vague and generic sense; and by derivation, composition and affixes, the root sounds produce those endless families of words, related to each other in every degree of kindred, from the closest to the most doubtful, which grammar finally ranges in the categories known as the parts of speech.'

But one can dogmatise only with danger here. Sex has been thought responsible for some of the shaping and beautifying of language among men, as it certainly has among the animals. Love made the first poet when every word was a poem, and all speech, perhaps, chaotically musical. It is a long step from the mutual calls of animals to the languages which whole peoples now use in international correspondence.

The influence of the sex-instinct in the formation or shaping of language is well seen at about the time of puberty, when the 'nonsense-talk' of lovers is so apt to be indulged in, and when even entirely new languages are sometimes invented and used for a considerable period. In other respects the relation of child and mother has probably always been the chief factor in the production of language, and women and children are still, in the *naïve* way, the typical users of language.

Regnaud (530), too, takes the cry as the point of departure for the history of the human mind as written in language. In the beginning, apparently, an *ensemble* of favourable circumstances caused the cry (now understood by consciousness) to pass from the instinctive to the rational state, and to become significant. One can hardly maintain, as some have done, that the cry was the creator of consciousness.

According to Zanardelli the language-unit is the interjection, which never really becomes a word, and never can be etymologised into a root and its prefix or suffix. From this point of view the great problem of early man was how to pass from interjection and imitative cries to 'roots.' The mechanism of an interjection, which is, so to speak, 'the heart of language,' lies more in the intonation than in the sound itself; *ah!* for example, may signify 'pain, pleasure, surprise, fear, admiration, reproof,' etc. The intonation which gave life to the original interjections still survives to give different meanings to real words (693). The psychology of the interjection has yet to be written.

Language used to Domestic Animals.—Some interesting facts in connection with the history of the cry may be gleaned from the study of the 'language used to domestic animals,' an exhaustive account of which has recently been published by Dr H. Carrington Bolton of New York. 'The terms used in calling them,' says Dr Bolton (65, p. 113), 'are generally corruptions of the ancient names of the animals themselves (sometimes with a prefix, as "come"), and the rest of the language is made up of obsolete expressions originally forming part of ordinary speech in the infancy of its development, which have been preserved through this special usage, together with inarticulate sounds and calls having their origin in the attempt of man to lower his language to the comprehension of the domesticated animals, and to imitate their own cries. All these words are subject to the same influences that lead to the development of dialects, thus producing transformations not easily traced; moreover, these changes are quite radical, inasmuch as the language is unwritten, and is perpetuated only by the *lore* of the *folk*.'

A very important feature of the language under consideration is 'the musical intonation, which gives to each cry a special character, having great influence with the animals addressed.' In calling, *e.g.*, an animal from a distance, 'the

cry becomes a loud shout in a shrill key, and greatly prolonged,' while, if the animal is close by, 'the same term is uttered in a soft, low tone, and coaxingly.' This intonation is almost an art by itself, and one may compare it with the 'calls' of children on the street, the 'cries' of hawkers and pedlars, and other more primitive forms of speech, where the same device is largely employed.

The Spanish proverb, 'It is useless to call *tus-tus* to an old dog,' exemplifies another aspect of this somewhat ancient language, for old animals and young animals have very frequently entirely different call-words. In Lettish, *e.g.*, dogs are called with *kuts! kuts!* and puppies with *tschu! tschu!* In Illyria dogs are driven away with *os!* or *cuke!* puppies with *sibe!* and Lithuanian shepherds call sheep with *ait, ait!* lambs with *burr! burr!*

It is worthy of note also that some children's names for domesticated animals are closely related to the corresponding call-words, *e.g.*, the word *hüz-paert*, used by children in Oldenburg, consists of *paert* ('horse') and *hüz*, the call-word for that animal. This appears clearly also in the following list of children's nicknames and call-words for animals in the Saxon Erzgebirge, which Dr Bolton cites from Gœpfert (65, p. 68):—

Animal.	Children's Nickname.	Call-Word.
Cow	mûtschl	mûtschl, mûtsch
Goat	hâpl	hâpl, hâp, hâp
Pig	boschl	boschl, bosch, bosch
Cat	mîzl	miz, hiz, hiz
Goose	lîwl	liwl, lib, lib
Chicken	zipl	zipl, zip, zip
Hen	butl	butl, but, but

Dr Bolton (65, p. 66) calls attention to the fact that the dog has been highly favoured by man, who 'pays an unconscious tribute to the intelligence of his faithful companion by addressing him with words of ordinary speech,' while for the other domestic animals (horses, cattle, sheep, swine, poultry, etc.) he employs 'a variety of singular terms never used in speaking to his fellows; these comprise inarticulate sounds and musical calls, besides whistling, chirping, clicking, and

other sounds not easily represented by any combination of letters of the English alphabet, nor by musical notation.' No careful observations have yet been made of the conduct of children in this matter. To other animals than the dog, just as to his own infant, man seems to prefer to use a sort of speech which, as Dr Bolton remarks, is 'baby-talk' of an *outré* type. It is, however, a curious fact that, for the benefit of man's first pet, his human child, one sort of 'baby-talk' was devised, and for his second, the domesticated pet animal, another.

Another fact, paralleled also in the beginnings of speech in the human individual, is brought out by this author, who observes: 'Since the same sound is used in Germany to stop horses as is used in Italy to start them, viz., *brrrr*, it is conceivable that an Italian horse transported to Germany might bolt in response to the Teutonic command to stop. Several reversals of this character have been reported to me; the click, *xlk*, used to start horses in the United States is employed to stop them in India; the chirp, *psp*, used in the United States to urge horses forward is used to stop them in South Africa; and the *hue* and *dia*, used in France to direct animals to the right and left respectively, are said by the lexicographers, Malin, Pictet and Littré, to be employed in the reverse sense in Switzerland.'

Somewhat similar contradictions are found in the gestures and customs of courtesy of various peoples, and in the corresponding actions of children. How some of them may have arisen, or been perpetuated, may, perhaps, be seen from the following account, given by Colonel Mallery, of the origin of two mistakes in salutation: 'The Chinese in Utah fell into a curious blunder in using some of our phrases. On meeting a resident at any time of day or night they called out "good-morning!" and, on parting, "good-night!" even if it was before breakfast. A similar error in imitation was made by the Zuñi. When the officers from Fort Wingate visited the Pueblo, they were naturally anxious to reach the traders' store, so they called out to the first person they met, "How are you? Where's the store?" The Zuñi caught up all the sounds as one greeting, and, in the kindness of their hearts, shouted them to all subsequent visitors. The salutation, "How are you? Give me a match!" has a like explanation.'[1]

[1] *Amer. Anthrop.*, Vol. III. p. 206.

In many parts of the world, with the introduction of the horse and other domestic animals, have gone the call-words of the people introducing them. In Hawaii, *e.g.*, English call-words are used. So, too, the Cairo donkeys 'know the English *stop*, which the boy-drivers now use,' and Bulgarian horses 'the Turkish *girr*, "back."' Moreover, some animal-trainers are said to use only French words in addressing their animals.

Animals seem to resemble children in the readiness with which they come to recognise varieties of intonation, change from one language to another, and in their early life differ from their latter years in the nature of the speech-forms which they can appreciate. Some more evidence of like import may be expected from the study of the cries to wild animals among savages.

The 'Hearer' in Language.—Dr Lukens (377, p. 443) calls attention to the fact that in most, if not all the current discussions of the origin of language, the hearer is entirely ignored, although 'the question of what sounds will attract the attention of, and be understood by, the hearer is at least as important a question as what sounds the speaker will naturally make'; the onomatopœia will need to be for the hearer as well as for the speaker, as evidenced by the hunter's use of the calls or warning sounds of animals, etc., 'the sounds to which they give heed, and therefore the first to which they attach meaning.' According to Dr Lukens, the case is similar 'when the mother or nurse imitates the child's babble and says, "papapa," or "mamamama," or "baby."' All such words, together with 'all the *original* words for food' noted by various writers, 'are mere natural sounds that come to have a meaning by the fact that the parents or others adopt them, and accept their use by the child, who thus gradually associates meaning with them. It is well known that these same sounds occur in nearly all languages, but the meaning varies, especially among savage languages, although always pertaining either to the child, or parents, or food, or other necessity of the early months of life. Baby-talk is of the rankest growth among savages, and undoubtedly played a greater *rôle* in the past than it does at present, being now so far extinguished by the greater necessity of conformity to adult usage.' Somewhat similar views were reached by Brinton in his paper on 'The Physiological Correlation of certain Linguistic Radicals,' where he thus explains the origin and widespread character of such 'physonyms' as *mama*, *nana*, *ana*, *papa*, *baba*, *tata*: 'In the

infant's first attempt to utter articulate sounds, the consonants *m*, *p* and *t* decidedly preponderate; and the natural vowel *a*, associated with these, yields the child's first syllables. It repeats such sounds as *ma-ma-ma* or *pa-pa-pa* without attaching any meaning to them; the parents apply these sounds to themselves, and thus impart to them their signification' (p. cxxxiii.). In this way have arisen certain personal pronouns, demonstratives, locatives, words of direction and indication, whose radicals are these and kindred consonants, thus accounting for a surprising similarity in the phonetic constitution of many of these words in innumerable, unrelated families of speech all over the globe.

Reduplication.—Reduplication, in primitive tongues, is not by any means the very simple thing that some writers about child-language have made it out to be. Says Dr A. S. Gatschet[1]: 'One of the most ancient features of an Indian language is reduplication for inflectional purposes. In this we observe a thorough difference between Maskoki and the languages west of the Mississippi River. In Maskoki the second syllable is the reduplicated one in adjectives and verbs; west of the river, at least in Tonika, Atákapa and Tonkawe, it is the first one. Linguists able to appreciate this circumstance fully will not deny that it is of great weight in separating certain classes of linguistic families from each other, and consequently in assigning them different areas in primordial epochs. The Sahaptin and Dakota excepted, no other linguistic family of North America is known to me which reduplicates for inflectional (not for derivational) purposes in the same manner as Maskoki.'

As a means of forming the plural from the singular reduplication is known to many primitive American tongues, *e.g.*, Tsimshian, Kwakiutl, Nahuatl, which others, equally primitive, such as the Kootenay, know nothing about in this connection, just as many languages are unacquainted with the Aryan device of forming the preterite of verbs by reduplication. And the modified forms of reduplication are by no means all of the sort represented by the first word of three syllables coined by the little child of Professor Ferri, *patata* (combined from *tata* and *papa*).

In some languages reduplication becomes a fine art, or even a science. Among the hundreds of reduplicatives existing in the Yoruba (a West African language of very primitive charac-

[1] *Migr. Leg. of Creeks*, Vol. II. p. 71.

ter), we meet with not a few like the following: *du-du*, 'black'; *fì-fi*, 'dimness'; *fò-fo*, 'glittering'; *fu-fu*, 'white'; *ra-rá*, 'loudly'; *ya-ya*, 'nimbly,' etc.—there being apparently a very strong tendency to form adverbs relating to colour, motion, etc., by reduplication, a peculiarity noticeable also in the Fanti language.

This use of reduplication is nowhere better seen than in the Klamath, an Indian language of Oregon, the grammar and vocabulary of which have recently been most carefully studied by Dr A. S. Gatschet (239). The following examples will illustrate the point:—Red = taktakli; Rough = kitchkitchli; Slippery = laklakli; Smooth = tatatli; Strong = litchlitchli.

The law of least effort encourages reduplication in child-speech, but environment causes it to be almost entirely (with the exception of a few imitated or suggested onomatopœias) of the nature described by Dr G. Stanley Hall in the case of a young boy (269, p. 133): 'Pleasure was often found in making all possible noises with variations of pitch, stress, etc., but whether for ears, voice, or both, none can say. Often the talking of adults is imitated by prolonged jabbering, as, later, writing is imitated by prolonged quiddling with a pencil before letters are known. When told to say after me a list of words of two syllables, the first syllable was almost always repeated, *e.g.*, Mary was *wa-wa*, always loudly spoken, for she was a big, loud-voiced girl; Julia = *du-du*; little = *ĭh-ĭh*; blanket = *ba-ba*; faster = *fa-fa*; master = *ma-ma*; pasture = *pa-pa*; naughty = *na-na*, etc.' These imitative reduplications are very common among children, and primitive peoples exhibit similar phenomena.

Child-Language and Primitive Speech.—In a very interesting article on 'The Speech of Children,' in the *Nineteenth Century* for May 1897, Mr S. S. Buckman sets forth the following theses, which he supports with many data from the observation of child-language (90):—1. The variations of human languages originated in the imperfections of human organs of speech. 2. All human language could, in the course of time, have been developed from the variations made by human beings in their efforts, first, to pronounce one original word, then to speak the forms this word assumed by such treatment, and so on. 3. Such a primordial root may be *kak* = 'excrement, disgust.' 4. The infancy of speech in the individual shows what was the infancy of speech in the race. 5. The

vocabulary of the present-day human baby at twenty months old approximately represents the speech of adult pre-human ancestors. 6. The speech, with all its imperfections, of a three-year-old child would be about the attainment of primitive adult human speakers. 7. The speech of children, the slang of the play-ground and the talk of the street may all be studied for the better understanding of the genesis of human speech.

The idea that through the attempt to pronounce the first word (or words), and through imitation of the variations thereby produced, the variations of human speech (aided by the peculiarities of the organs of speech at the time) arose, is a theory not nearly so difficult to believe as the view that the original begetter of all human language was the discomfort representing 'root *kak*' (*cf.* Gr. κάκος, Latin *cacare*, and *hoc genus omne*), out of which, by decapitation, decaudation and syncope of its descendants, the world of speech and all that therein is were born (*cent* from *dakadakantam*, 'bike' from *bicycle*, *blame* from *blasphema*, are thought to point the ways in which such things were accomplished). Not much more satisfactory would be the development of 'the three roots of Teutaryan language—*ma* ("mother"), *da* or *ta* ("father," "food"), *la* ("talk")'—out of the *ta-la-ma-da* series of the lullaby talk or babbling of the prattling child.

Whether the speech of a twenty-months old human child lies nearer to that of 'adult pre-human ancestors' than the speech of a three-year-old to that of 'primitive adult speakers' is a matter that calls for very little dogmatism, although, perhaps, we underestimate still the real speech-capabilities of both the last. Buckman is upon much safer ground when he discusses the facts of child-language themselves and their resemblances to similar facts in the speech of primitive peoples (the loss of initial or final *s*; the change of medial or initial *s* to *h*; the substitution of *n* or *ng* for *l*, of *n* or *l* for *r*; the interchanging of *t* and *k*, *d* and *g*, *w* and *r*, *s* and *f*, *b* and *p*; the dropping of initial *p*; and the innumerable seeming oddities which lie in the child's attempts to reproduce the words and sounds used by the adults and others of his environment). Coincidences with old Irish, the classic tongues, Polynesian dialects, and American or Australian primitive languages, are certainly by no means uncommon, though their significance is apt to be much exaggerated. In fact, the idea suggests itself that after all the child may be as imperfect as reproducer of past human

(or pre-human) speech as his *mangkoobe* = 'mantelpiece' and *ihha* = 'scissors' show him to be of the present forms of human language. His invention rather than his imitation ought to be the prime trait allying him with his kin of long ago.

Following up a rather curious paper by Alfred Russell Wallace (673), in which is exploited the relation of mouth-gesture and primitive language, Mr Charles Johnston, starting from the premise that 'the human race began to talk as babies begin to talk,' with the corollary that 'in the prattle of every baby we have a repetition, in a minor key, of the voice of the earliest man, and by watching the first movements of speech in a baby we can see once more the steps in articulate language which the whole world of man once took in dim ages long ago' (319, p. 499), reaches the conclusion that 'a vast period of vowel-language preceded by a long interval all consonant speech.'

Vowels and Consonants.—After this came 'a transition period of great wealth and variety, where breathings and semi-vowels were added to pure vowels; then arose probably nasals, and, last of all, pure consonants.' Of this vowel-speech the author maintains that 'it is strictly spontaneous, from within outwards; it is the same in babies of different lands, whose parents speak entirely different languages' (319, p. 502).

Here again the author's data from the language of baby-hood are more convincing than his citations from the tongues of primitive peoples. The first real speech may have arisen from the reduction of the child's *a-a-a-a-a*, *o-o-o-o-o*, *u-u-u*, etc., to single dimensions, and *tata* may be one of the *omnibus*-expressions of early human speech, but the statement that the Polynesian language represents 'the second period of baby talk,' on account of its abundant use of pure vowels, blinks the notorious fact that much of the 'vocalic character' of Polynesian dialects is due to omission and dropping of consonants, gutturals especially—a phenomenon very noticeable, *e.g.*, in the language of Hawaii. In like fashion elimination of vowels has given to some other primitive tongues a very 'consonantal character.' These historical accidents and incidents cannot, therefore, be made the basis of a comparison with baby-speech. The Polynesian language, *e.g.*, is not 'an arrested form of baby-speech,' nor can it be said to have inherited from the distant past characters which it has only recently acquired. Similar criticisms apply to Mr Johnston's general assertion that 'the speech of Polynesians, Chinese and Negroes—of the red,

brown, yellow and black races—corresponds to definite stages of baby-talk.'

According to C. Crozat Converse,[1] who holds that 'music's mother-tone is man's mother-tone,' the original vowel sound is 'the primitive *a* (*ah*), the first, simplest, easiest of all vocal utterances, the onomatopic vocable for mother.' Further, we are told, 'man, to intensify its love-symbolism in verbal expression, gave it the verbo-consonantal prefix, *m-ma*, and children verbally melodised and sweetened this symbolism by iteration, *mama*.' The meaning of this mother-tone is thus described: 'The mother-tone *a*, with the *ma*, *ba* of every baby, white or black, bond or free, born of ignorant or learned parents, of the baby of all nations under the sun—this cry of lamb, kid, calf, with its feline and canine modifications, is one of those germs [tone-germs found not only in the voice of man but in the voices of the animal kingdom], one which expresses a crying desire, the immediate satisfying of which is sought.' Thus in the very beginning 'onomatopy demonstrates the synthesis of man's heart with man's mind.'

Some writers on the speech of early childhood have not only recognised a 'pure vowel period,' but have distinguished closely the times of appearance of the individual vowels (singly and in combinations), and it seems to be generally admitted that vowels precede consonants. The differences in individual children are, however, remarkable, and sufficient attention has not yet been given to what Dr Lukens has styled 'mere play sounds,' which, during the first year of childhood, 'are perfectly free, now exercising the lips, now the tongue and palate, and again the throat parts,' etc. Out of the richness and variety of this 'primordial babbling'—to use Professor Sully's term—'a rehearsal for the difficult performances of articulate speech,' the sounds of later life grow by laws yet little understood. Preyer inclines strongly to this view, but Sully is rather of opinion that 'we have in this infantile "*la-la*-ing" more a rudiment of song and music than of speech,' and would see in this 'voice-play,' more of 'a rude, spontaneous singing,' which prepares the way for the production of articulate sounds. He finds here a *rapprochement* to primitive man; 'the rude vocal music of savages consists of a similar rhythmic threading of meaningless sounds, in which, as in this infantile song, changes of feeling reflect themselves' (621a, p. 137).

[1] *Monist*, Vol. V. p. 375.

Thoroughgoing scientific studies of the sounds of early child-speech are few and far between, though Tracy, Sully and Lukens have not a little to say on the subject in addition to the earlier writers, the 'table of mispronounced initial sounds' given by the last being of special value. As Dr Lukens justly observes (377, p. 453): 'A little child's mispronunciation is rather an indistinctness or vagueness of utterance than an out-and-out substitution of a wrong sound for a right one.' Professor Sully says (621a, p. 151): 'In certain cases there seems little kinship between the sounds or the articulatory actions by which they are produced. At the early stage, more particularly, almost any manageable sound seems to do duty as a substitute.' These facts seem to be paralleled by certain phenomena characteristic of not a few primitive tongues. According to Father Montoya, there is in the Guarani language of South America 'a constant changing of the letters for which no fixed rules can be given,' and Brinton cites from the Araucanian language of Chile, *fide* Dr Darapsky, the permutation $b = w = f = u = i = g = gh = hu$ (73, p. 398). Brinton also informs us: 'In spite of the significance attached to the phonetic elements, they are in many American languages vague and fluctuating. If, in English, we were to pronounce the three words *loll*, *nor*, *roll* indifferently, as one or the other, you see what violence we should do to the theory of our alphabet. Yet analogous examples are constant in many American languages. Their consonants are "alternating" in large groups, their vowels "permutable." M. Petitot calls this phenomenon "literal affinity," and shows that, in the Tinné, it takes place not only between consonants of the same group, the labials, for instance, but of different groups, as labials with dentals, and dentals with nasals. These differences are not merely dialectic; they are to be found in the same village, the same person. They are not peculiar to the Tinné; they recur in the Klamath.'

The following table contains the order of frequency as initial sounds of the principal letters, in the ordinary English Dictionary, in the child's vocabulary as estimated by Prof. Kirkpatrick and Dr Tracy, and by the present writer in several American-Indian languages, in the Yoruba of West Africa and the Chinook Jargon. The number of words examined in each case is sufficiently large to determine the general character of the language.

Table of Relative Frequency of Letters as Initial Sounds.

Order.	English Dictionary (Kirkpatrick).	Robinson Crusoe (Kirkpatrick).	Children's Vocabulary (Kirkpatrick).	Children's Vocabulary (Tracy).	Kootenay (A. F. C.)	Dakota (A. F. C.)	Cree (A. F. C.)	Ojibwa (A. F. C.)	Niskwalli (A. F. C.)	Nahuatl (A. F. C.)	Chinook Jargon (A. F. C.)	Yoruba (A. F. C.)	Native Element in English (A. F. C.)	Borrowed Element in English (A. F. C.)
1	s	s	s	b	a	w	k	a ; m	s	tl	k	a	s	k (c)
2	p	c	b	s	k	i	p	n	o	t	l	i	t ; k (c) ; b	s
3	c	p	c	k	g	a	a	b	t ; a	i	s	k	w	a
4	a	a	p	p	n	o ; k	m	w ; g	h	n	t	o	h	b
5	t	f	t	h	t	y	w	o	t	c (k) ; m	p	d	f	m ; d
6	b	b	w	d ; m ; t	tl	k.	n	k	tl	a	m ; h	s'	l	r
7	r	r	d	w	s	h	t	p	d ; ch	qu	i	o.	m	t
8	m	m	m	n	w	t	s	t	l	p ; y	o ; ch ; a	e.	g	e
9	d	e	h	g	y	p	i	j	p ; b	x	e	t	d	g ; f
10	f	t	f	l	k.	n	o	i ; s	u	ch	w	g	a	h
11	e	w	r	a ; r	m	ć	y	d	g	u	n	b	p	v
12	h	h	l	i ; sh	g.	b	e	e	e ; w	o	y	f	r	l
13	l	l	g	th	i	m	h	h	m	e	b	e	n	i
14	g	i	n	e	q	ś			i	ç (s)	d	l	o	o
15	w	g		o	e	s ; e			y		g	s	ch	n
16	o	o		ch ; j ; y	o	h			n			r	y	j
17	v	n		u	p	d			j			m ; w	i	w
18	n	u		v	h	z ; ź			z			n	wh	q
19	u	v		q		ġ ; l						h	v	u
20						t.						ŋ	q	z
21						p.							u	y
22						ć							z	x

This table illustrates both the resemblances and the differences in the phonetics of primitive languages and the speech of children. We, of course, have no details as to the child-vocabularies of the primitive peoples, whose languages are here represented, but it is very probable that in their phonetics such vocabularies will approximate more to the adult speech than do the various vocabularies of children all over the world one to another. A point of interest is suggested by the last two columns in the table (based upon Skeat), which reveal certain differences between the 'native' and 'borrowed' elements of our English vocabulary. Studies along this line might be productive of good results.

In the Déné (Athapascan) languages of North-western Canada the consonants preponderate to such an extent in the essentials of word-formation that Father Morice does not hesitate to say that 'in so far as the root-words are concerned the phonetical graphical signs of the Déné languages might be reduced, as in the ancient Semitic tongues, to the mere consonants.' The following examples will suffice to illustrate. The radical *t-n-*, *d-n-*, 'man,' appears, in the various dialects, as tana, tane, tani, denu, déné, danè, dinè, dunè, etc.; the radical *nn*, 'earth,' as nna, nne, nni, nnu, nèn, nan, etc.; the radical *ts-*, 'beaver,' as tsa, tsé, tsi, tso, tsu. In these languages, then, 'the vowels are transmutable, and therefore, except in a very few cases, no importance whatever should be attached to them' (438, p. 150).

'*Clicks' with Savages and Children.*—There are many points of resemblance between the languages of primitive peoples and those of children, but, all over the world, children seem to possess a remarkable ability to produce even the most difficult of sounds, if these be at all favoured at the beginning. Thus, according to Kussmaul and Gutzmann (261, p. 38), in the early period of instinctive speech-production very young children utter not only all (or nearly all) of the sounds characterising their later adult speech, but can also produce 'sounds completely corresponding to Arabic and Hebrew gutturals,' which adults of Aryan stock find considerable difficulty in reproducing at all. Moreover, as Gutzmann tells us, children use 'clicks' very early—clicks that occur in no civilised language, but are found in several savage languages, such sounds being actually, 'from a mechanical point of view, easier for the child to produce than the corresponding

explosives.' These clicks survive to some extent, according to Gutzmann, in the lip-click of the 'kiss *par distance*,' the tongue-clicks in interjections of sorrow, admiration, etc., and in the interjectional exclamations used in urging on horses and other animals, but they are little more than very rudimentary speech-sounds, and not, as in the speech of the Hottentots, *e.g.*, complete sound-elements. Dr Gutzmann cites from Büttner the statement that among the Khoi-Khoin the children have a *penchant* for these clicks, and 'even little children a few months old are without doubt able to repeat the clicks before they can say *papa* or *mama*.' And not only can children of other savage tribes learn Hottentot easily, in contrast with adults, but there seems to be no special constitution of the child-mouth among the Hottentots for the production of clicks. We learn, moreover, that, while the Hottentot infant, growing up in a foreign environment, does not acquire the click, the children of the European missionaries, who grow up among the Hottentots, 'speak the language like the natives,' clicks and all. Apparently the speech-capacities of the infant, so far as phonetics are concerned, are no less wonderful than the accomplishments, later on, of the child in the field of the dictionary and the grammar. Herder said: 'Man is so endowed, so circumstanced, and such is his history, that speech is everywhere and without exception his possession. And, as speech is the property of all men, so is it the privilege of humanity; only man possesses speech.' Citing this passage in his *Races of Man* (523, I. p. 30), Ratzel observes: 'We may add that mankind possesses it in no materially different measure. Every people can learn the language of every other. We see daily examples of the complete mastery of foreign languages, and therein the civilised races have no absolute superiority over the savage.' This is true in all parts of the globe, as Ratzel indicates: 'Many of the persons in high position in Uganda speak Swaheli, some Arabic; many of the Nyamwesi have learnt the same languages. In the trading-centres of the West African coast there are negroes enough who know two or three languages; and in the Indian schools in Canada nothing astonishes the missionaries so much as the ease with which the youthful Redskins pick up French and English.'

Originality and Logic of Children in Language.—The fact emphasised by Stoll that 'children create and use for a time

linguistic forms that are more logical than those employed by their parents or than the usual forms of the language to the use of which they are destined' (617, p. 4) is borne out by the studies of Horatio Hale (267, p. 113) and others who have investigated the phenomena of spontaneously-generated child-speech. The logic of the child has been discussed by Munz (452), who, starting from the standpoint that 'with the child, as with primitive man, the first vocal sounds are the result of a mechanical creation, a reflex movement,' points out that 'we teach children not *language-speaking*, but merely *our language*.' It is the artificial product of centuries of human determination and co-ordination, not the logical development to the full of an instinctive primitive speech, that we give over to the child. It is for this reason that the language of the child under the immediate influence and example of adults (who are, logically, other-minded than he) differs markedly from the carefully-built-up and entirely consistent tongues of many savage and barbarous races, while, in their regularity and mode of derivation one from another, the verb-forms and inflections proper to the spontaneous language of the child often distinctly recall the corresponding features of the speech of many primitive peoples. Such a sentence, *e.g.*, as: *Dem Papa wurde* IHR *Buch auf der Mama* SEINEN *Platz gelegt*, could not exist in savage languages. One of the greatest triumphs of human language has been to get rid of the 'logical' machinery of speech, classification-words, suffixes, affixes, prefixes, infixes, gender-noters, time-markers, action-recorders, place-indicators, *et hoc genus omne*, with which many primitive languages fairly riot—to substitute, in fact, a logic of the mind for a logic of the tongue, an art of thinking for one of word-making. But so free has the language of to-day become from such developmental-processes that the child, to whom many of them are as natural as they were to the first of our race, misses in the ready-made speech imposed upon him the stimuli which go so far to produce the *naïveté* and the genial side of the highest forms of language which, as is well-known, themselves approximate often to other, and perhaps higher, ideals born of the child himself.

Child Speech and Linguistic Variety.—Mr Hale observes, concerning the following sentences of a three-four-year-old boy (267, p. 99), 'Harry just now see two pigeon-pigeon, fly high, high,' 'cat scratch Harry, yes'day,' that 'the philologist

will see that, except in the absence of pronouns (and sometimes even in this respect) it represents the simplest form of agglutinative speech, such as we find in the Malay and Manchu groups of languages.' Of the speech of a little two-year-old boy of his own household, the same competent authority tells us, 'They were all monosyllables, composed either of one vowel or diphthong alone, or else of a vowel or diphthong preceded by a single consonant. Every word ended with a vowel [as is the case in not a few primitive languages], and two consonants never came together. All his words were thus reduced to a form of the utmost simplicity; and, of course, the same syllable had many significations.' Mr Hale also adds this comment: 'What was particularly interesting was the fact that this language took a completely Chinese form. In the proper Chinese, as is well-known, every word ends in a vowel, either pure or nasalised; and the great majority of words comprise but a single consonantal sound.' Some details of the language of a little nephew of the distinguished philologist, Professor G. von der Gabelentz, are likewise given by Mr Hale (267, p. 113). This child called things by names of his own invention, and 'in these names the constant elements were the consonants, while the vowels, according as they were deeper or higher, denoted the greatness or the smallness.' Some of these words were,—

(a) *lakail* = an ordinary chair; *lukull* = great arm-chair; *likill* = little doll's chair.

(b) *mem* = watch, plate; *mum* = large dish, round table; *mim* = moon; *mim-mim-mim-mim* = stars.

(c) *papa* = father (every grown-up male person at first); *o-papa* (from *Grosspapa*) = grandfather (other gentlemen); *u-pupu* = uncle; *pupu* = father with a big hat on, big papa.

Here we certainly have (as we had in the case of the other child a monosyllabic form of speech in the making) the beginnings of a system of inflection like that of the Semitic and other language-stocks that inflect by means of vowel-change, and we can see how, in childhood, languages morphologically as distinct as Chinese and Hebrew could readily have arisen, even within the same household. There is, therefore, much force in Mr Hale's conclusion,—'It would be more exact to say that each linguistic stock must have originated in a single household. There was an Aryan family-pair, a Semitic family-pair, an Algonkian family-pair. And, further, it is clear that the

members of each family-pair began to speak together in childhood. No instance was ever known, nor can one be reasonably imagined, of two persons, previously speechless, beginning to speak together in a new language of their own invention after they had attained maturity. On the other hand, many instances are known in which young children have devised and constantly used such a language.' Interesting in this connection are Dr Lieber's account of the vocal sounds of Laura Bridgman, and the remarks of Heinicke cited by Wedgewood (678, p. xiv.), from Tylor : 'All mutes discover words for themselves for different things. Among over fifty whom I have partially instructed or been acquainted with, there was not one who had not uttered at least a few spoken names which he had discovered for himself, and some were very clear and distinct. I had under my instruction a born deaf-mute, nineteen years old, who had previously invented many writeable words for things. For instance, he called "to eat" *mumm*, "to drink," *schipp*, etc.'

Origin of Linguistic Diversity.—The irrepressibility of this language-instinct in early childhood is, Mr Hale thinks, the cause of origin of the varieties of human language (107, pp. 261-267). Not alone the Aryo-Semitic problem, but the existence of such a diversity of speech in such comparatively limited areas as the Oregon-California region and the Caucasus, finds explanation through this theory. To use the words of Mr Hale: 'It was as impossible for the first child endowed with this [instinctive language] faculty not to speak in the presence of a companion similarly endowed as it would be for a nightingale or a thrush not to carol to its mate. The same faculty creates the same necessity in our days, and its exercise by young children, when accidentally isolated from the teachings and influence of grown companions, will readily account for the existence of all the diversities of speech on our globe' (267, p. 47). Hale gives brief accounts of many 'original languages' of children, and their great number (for they are really not at all rare) affords a point of contact in parallelism with the condition of the earliest known tribes of man, for as Powell says (507, p. 101): 'As we go back in the study of languages they are multiplied everywhere. Mr Cushing . . . comes from the study of one little tribe, the Zuñi, and finds its speech made up from two or more tongues which have coalesced. And so I might

illustrate from the many languages in North America, and show that no speech has been found that is not made up of other tongues; all are compound.' According to Brinton, also (74, p. 62): 'Within the historic period, the number of languages has been steadily diminishing. We know of scores that have become extinct, as many American tongues; others, like the Celtic, are in plain process of disappearance.'

Hale's view of the child's activity in the origination of the diversity of human language and human languages has been looked upon with favour by Romanes (547, pp. 138-144), Higginson (296), Brinton (74, p. 61), and other authorities.

Secret Languages of Children.—Following up the articles of Dr F. S. Krauss of Vienna, on 'Secret Languages,' Dr Oscar Chrisman, a former pupil of the present writer, has studied in great detail the passion for 'secret languages' among children, which may be brought into relation with the facts adduced by Hale. Dr Chrisman tells us that 'of nearly five hundred specimens of secret languages used in childhood, I know only one instance where the children obtained such from a book. . . . All the other secret languages had been either handed down to the users or made up by them. In the great majority of the spoken languages they were given by somebody to the ones using them, while in the written languages a greater number were made by the users' (110, p. 55). He remarks upon the universal use of secret languages and the commonness of cipher alphabets, and Sartori has called attention to the very frequent use of special and secret languages by various individuals, societies, classes, sects, castes, trades and professions, in all ages and among all peoples.

Dr Chrisman holds that (110, p. 54): 'This secret-language period is a thing of child-nature. There are three distinct periods in language-learning by the child. The first is the acquiring of the mother-tongue. The second period comes shortly after the time of beginning to learn the mother-tongue, and is a language made up by children, who perhaps find themselves unable to master the mother-tongue. Very few children have a complete language of this kind, but all children have a few words of such. Then comes the secret-language period. Although in a few cases the learning of secret languages began about the sixth year, and in some instances the period ran till after the eighteenth year, yet the vast

majority of cases are covered by the period between the eighth and the fifteenth year, while the greatest use is between the tenth and the thirteenth year.' To this classification it may be objected that the 'mother-tongue' is not the *first* language the child endeavours to perfect, but its own tongue, which the learning of the mother-language suppresses—at least this is a reasonable view to take of the facts in question. This, however, need not detract from the pedagogical importance which Dr Chrisman attaches to the secret-language period, as being 'next to the mother-tongue period, the very best time for learning foreign languages'; these language studies might, perhaps, be begun in the lower school grades.

Not entirely satisfactory, however, is Dr Chrisman's attempt to improve upon Mr Hale's theory of the *rôle* of child-language in the production of the diversities of human speech: 'Thus, following Mr Hale's theory, the linguistic stocks might arise from the second language period of children, and the varieties in the individual stocks might come from the third (secret) language period of children. If we should hold that the child passes through all the periods of the race—an epitome of the race—this secret-language period again becomes an important matter; for it may show that at a corresponding period in the race man had an instinct for secret-language-making. One family would have its own language, and another family its own language; these in time separating, and each family keeping up its language, would give to us the linguistic stocks or the varieties in the linguistic stocks' (110, p. 58). But the utter artificiality in the making of the words of not a few of these secret languages, and their great lack of the real raw material out of which grew primitive grammar, forbid the belief that they have ever played such a *rôle* in the history of the race as may have done the 'original' languages of children described by Mr Hale, many of which are not mere vocabularies of words ingeniously contrived and cunningly employed, but real, live, growing languages, with all the apparatus of grammar and the means of infinite variation and modification. Too many of the secret languages suggest an imitated or transmogrified dictionary to be taken as the best efforts of the language-instinct of childhood, even though they be almost the only noteworthy product of a formative period of child-life. In the period of its first origins, language was much more naïve and socially spontaneous, and the first *clamor con-*

comitans did not at all resemble the scene of the three little girls, each choosing in order a syllable, and producing, as their joint work to express the idea 'the feeling you have in the dark when you are sure you are going to bump into something,' the word *ku-or-bie* (110, p. 378). We may be sure that the Australian word, *pirrakuna*, by which the Dieyerie tribe of South Australia express the idea 'groping in an enclosed space with the hands for anything,' was never created in any such deliberate and carpenter-like fashion—and the same thing may be said of the great mass of primitive speech. Nevertheless, the words which Dr Chrisman cites from a dictionary composed by two girls are very interesting and suggestive (110, p. 57), although we need the whole two hundred to properly orient ourselves regarding them. It is very doubtful if such expressions as the following, composed by 'a purely mechanical process,' offer real points of contact with the language of primitive man, or the real 'original' language of childhood: *Bomattle* = where utterly lost things went, where the light (of a match when struck) came from and went to, etc.; *dovey* = when one seems to resemble one's name; *evo* = instinctive feeling that some one whom you do not see is in the room with you; *owly* = feeling one has when he has found anything; *paldy* = feeling of the world being like a theatre. Perhaps the nearest approach in all to the list of primitive words with life in them and devoid of the namby-pambyism of so many of these 'feeling' words, are *halala* = 'exultant feeling, wild and inspiring, from the influence of being out in a wild wind-storm by the sea,' etc.; and *sabba* = 'individual house-smell.'

It ought to be mentioned that Mr Hale's theory was largely anticipated by Dr von Martius, whose study of Brazilian dialects led him to consider the influence of isolated families of hunters and fishers upon the variation of language, and the effects produced by the adoption by parents of changes initiated, especially in pronunciation, by children, to say nothing of the marked differences existing in the language of individuals, all of which contributes to prevent these languages becoming stationary, and induces in them countless variations of accent, pronunciation, vocabulary, and even grammar and syntax. Dr Charles Rau, who remarked that 'it would seem that, among savages, children are, to a great extent, the originators of idiomatic diversities,' and Oscar Peschel, who

emphasised the results, among savage people, of the over-indulgence of parents in 'baby-talk,' by which sometimes a new dialect has been started (524, p. 44), followed von Martius. Not much has been written about the child-language of primitive peoples; we know, however, that much of the vocabulary ascribed to the children of savage peoples is as far from being original with them as it is with us. Concerning the child-language of the Iroquois Indians, of which not a few specimens are on record (and the same remarks apply to the child-language of the Algonkian Indians), the Abbé Cuoq, linguist and lexicographer, tells us (106, p. 322) that this language which is 'current in every family' is 'taught to the children by relatives, the mother in particular, and the child's *rôle* is merely one of imitation and reproduction.' There are, however, as with us, doubtless many real words invented by children among primitive races, but we are not yet in possession of facts concerning them.

Degeneration in Invention.—As to the inventive stage of child-language generally, Dr Lukens very aptly remarks (377, p. 442): 'This inventive stage may degenerate into the silliest, emptiest nonsense, holding the child back in his progress, and injuring his development permanently if it is too far encouraged by parents and others through adopting and using the babyish nonsense themselves, or even by recognising it and letting the child see that it will pass as language. One unfortunate infant, brought up under the tutelage of such a Georgy-porgy, wheely-peely baby-talk mother, called a dog a "*waggy*," a cow a "*horny*," a horse a "*haha*," a nut a "*cacker*," his nurse "*wow-wow*," and a banana a "*parson*," and kept it up till he was four years of age (Marion Harland).'

An interesting example of the influence of 'baby-talk' is given by Mrs Hogan (300, p. 146), where the *piggie-wiggie-wiggie* of some verses improvised by his aunt led a four-year-old child to make the request, 'Read the engine-book funny, *puffy, puffy, puff.*' The same child had the habit of talking himself to sleep with, *A*-old, *b*-old, *c*-old . . . *z*-old.

Linguistic Invention at Puberty.—The language-creating faculty, by no means exhausted in childhood, often reappears with remarkable fulness and power in young men and young women (the latter especially) in those halcyon days which precede the complete attainment of manhood and womanhood. The 'second childhood of love,' as it has been called,

seems to resurrect the old instinct of earlier childhood, and give it a temporary range of splendour and luxuriance that is sometimes really wonderful. A young woman of twenty, known to the present writer, is very fond just at present of a language, apparently thoroughly informed with the necessary machinery of human speech, and yet entirely her own creation. In its vocabulary the following words appear: *aglia* = 'here it is'; *allía* = 'don't you see?' *baya* = 'yes'; *bahía* = 'yes, indeed!' *buya* or *buyunda* = 'darling'; *iyáta* = 'I don't know'; *nŭk* = 'here!' *nyum* = 'hm—hm!' *puyál* = 'sunset'; *vūt* = 'stop!' *yápacan* = 'always, forever'; *yŭg* = 'cold'; *bū ē lā* = 'where are you going?' Specimens of sentences as they are rattled off, without the speaker as yet apparently knowing the exact signification of each word separately, yet having some general, hazy idea of the meaning of the whole, are: *Puk-la būyät nŭtiyätä biyäka ikálūa būkalētz. Bía ešitātūk. Píkalăti buyatitz pikala.* Here, as in the early language-creations of childhood, we can see a language in the making, and the speaker only gradually attains to complete possession and control of it, while the hearer feels no such difficulty in its comprehension as meets him in the acquisition of a foreign tongue after the period of childhood has passed.

Characteristics of Early Child Speech.—Deville, in some very interesting articles in the *Revue de Linguistique*, the sagacity and ingenious patience displayed in which are highly praised by Henri (293, p. 50), notes in particular some of the most striking characteristics of child speech. Remarkable is the comparatively early age at which the 'faculté de rappel' occurs in children, a nineteen-months'-old girl, *e.g.*, 'talked just as if she were relating something to her mother.' Curious, indeed, are some of the associations that give rise to word-making; a girl of nineteen months, *e.g.*, called 'soap' *mené*, probably from *emmener promener* (she was washed before being taken out to walk), and a girl of six to seven years remarked, 'Nous étions arrivés à l'école en *retôt*,' having 'not the least intent to create a new word, or the least idea she had created one,' for her *en retôt* was as natural as *en retard*. The skill with which children observe and reproduce accent, intonation, cadence, etc., is wonderful, their ears seizing an infinitude of inflections lost to the adult ear, which is trained alone to perceive adult sounds. The child readily distinguishes *pa tē* = 'par terre' and *pā-tē* = 'pâté,' and some of its

performances in the way of accent and intonation rival the well-known phenomena of Chinese and other primitive tongues. The child's keenness for its own sounds is admirably revealed in the case of a little girl (nineteen months of age), who, indifferent to being called 'Suzanne' or 'Suzon,' and responding readily to either of these names, yet reproduces herself 'Suzanne' by *ia-ia* and 'Suzon' by *ia-io*, but refuses to answer when called by adults *ia-ia* or *ia-io*. A child (389 days old) who had been addressed in a somewhat severe tone responded imitatively *atata*, reproducing the adult's *attend, attend*, which she had just heard; another child (629 days old) reproduced *entends-tu* by *atatu*—in both cases the accent was faithfully preserved. To the child a single word, often a monosyllable like *ta*, may have a vast variety of significations, helped out by accent and intonation, outnumbering the meanings, *e.g.*, of *tu*, in the primitive tongue of the Fantis of West Africa.[1]

'*Sentence Words.*'—In the course of his chapter on 'Sentence Building,' Sully takes occasion to remark (625a, p. 171): 'It is not generally recognised that the single-worded utterance of the child is an abbreviated sentence or "sentence-word" analogous to the sentence-words found in the simplest known stage of adult language. As with the race so with the child—the sentence precedes the word. Moreover, each of the child's so-called words in his single-worded talk stands for a considerable variety of sentence forms. Thus, the words in the child's vocabulary, which we call substantives, do duty for verbs and so forth.' Lukens (377, pp. 453-8) emphasises the fact that when children in the latter part of the first year and the first part of the second year use single words to express their thoughts, 'the same word may mean very different things, according to its use. Inflection, tone and gesture are everything to the child (Preyer counted eleven such meanings of the German *atta*, "all gone," as used by his boy in the first two years, and nowhere near exhausted the list).' As Lukens rightly says: 'Such words are undifferentiated sentence-words, and are similar to such use of exclamations as "*Fire!*" or "*Thief!*" There is no grammar to such expressions, since grammar has to do with the relation of different words to each other, and here there is only one word. Language would mislead us badly if we were hence to conclude that the little child in using such expressions does

[1] *Journ. Anthr. Inst.*, 1896.

not really have a true judgment in consciousness. To classify such child-words by the adult distinctions of parts of speech and say that these children above quoted used the adverb "*up*" [=desire to be lifted up in arms], the pronoun "*me*" [=Give me that], the noun "*horse*" [=I want to ride], etc., but had not yet begun to use verbs, is, of course, simply to be misled by very superficial considerations.' For this reason children easily turn words into any part of speech, as Shakespeare could, and (Dr Lukens remarks) as most grown people do occasionally, when 'freed from the thraldom of the grammarians.'

Here, surely, Herbert Spencer's dictum applies that 'language was made before grammar,' though certain dialects, jargons and slang forms of speech show that it can also be made after grammar. The child's *hand-organing*, *I'm are* (in reply to the inquiry 'Are you going?'), *mebbe* (for 'it may be that'), *openit door* (with enclitic pronoun), *get-go* (='get your things and let's go for a walk'), and other expressions cited by Dr Lukens, find their analogies in the language of primitive man, of ignorant, civilised and criminal cultured man. Some interesting items as to the 'primitive sentence-words' (which the author, contrary to Steinthal, holds were more like verbs than nouns) of American aboriginal languages may be read in the linguistic essays of Dr D. G. Brinton, who remarks (73, p. 403): 'Primitive man, said Herder, was like a baby; he wanted to say all at once. He condensed his whole sentence into a single word. Archdeacon Hunter, in his *Lecture on the Cree Language*, gives us as an example the scriptural phrase, "I shall have you for my disciples," which in that tongue is expressed by one word.' And this incorporation (holophrasis, polysynthesis, etc.) is a very marked characteristic of perhaps most American aboriginal tongues. But there is a very wide difference between the 'sentence-word' of the savage and the 'sentence-word' of the child, between the Aztec *onictemacac*=I have given something to somebody (*o*=augment of the preterite, a tense sign; *ni*=pronoun, subject, first person; *c*=semi-pronoun, object, second person; *te*=inanimate semi-pronoun, object, third person; *maca*=theme of the verb 'to give'; *c*=suffix of the preterite, a tense sign), which Brinton cites as 'a characteristic specimen of incorporation,' and the child's '*give*.' The last is a primitive monolith, the first a modern tenement house.

Parts of Speech.—But there is, nevertheless, a real resemblance between the two 'sentence-words,' as may be seen from the following words, quoted by Dr Brinton from Winkler's discussion of the Pokomchi, one of the Mayan languages of Central America: 'The same word-complex functions here as a pure verb, or as a whole sentence, there as an equally pure noun; and again, under some circumstances, what was a verb, or a verbal expression, may take on a constructive increment, which will transfer it wholly into the adjective sphere.'[1]

The distribution of the various parts of speech in the vocabularies of children has been discussed by several writers. Dr Tracy gives the percentage calculated from 5400 words as follows: Nouns 90, verbs 20, adjectives 9, adverbs 5, pronouns 2, prepositions 2, interjections 1.7, conjunctions 0.3. The proportion in the 'boy's dictionary,' cited by Miss Wolff, was: Nouns 42 per cent., verbs 30 per cent., adverbs 10 per cent., adjectives 8 per cent., prepositions 4 per cent., all others 6 per cent. (648).

Mr Salisbury found the distribution of the parts of speech in his child's vocabulary, at different ages, to be as follows (561):—

Age.	Nouns.	Pron.	Verbs.	Adj.	Adv.	Prep.	Conj.	Int'rj.	Total.
32 mons.	350	24	150	60	32	20	4	5	642
5½ y'rs.	883	22	321	236	40	20	5	1	1528

Dr H. T. Lukens justly calls attention to the doubtful value of all classification of children's words according to adult ideas, as embodied in the division into 'parts of speech,' for children, even more than geniuses or jargon-users, and some savage peoples, often fail to make any such distinctions whatever, using a noun for a verb, a verb for a noun, an adjective for an adverb, or, *vice versâ*, an adverb or preposition for a verb. He gives the following interesting examples: 'It *ups* its false feet' (said of an amœba under the microscope); 'a *chop*' (= an axe); 'the hurt *blooded*; can I be *sorried*' (*i.e.*, forgiven); to *die* (= to make dead, to kill); he was *hand-organing*, etc. (377, p. 454). Still the parts-of-speech-classification does serve as a rude test and is not entirely worthless, even

[1] *Amer. Antiq.*, Jan. 1894.

though the child is really sentence-wording a good deal of the time.

Dr Tracy quotes Professor Kirkpatrick as giving the corresponding percentages in the English (adult) language as: Nouns 60, verbs 11, adjectives 22, adverbs 5.5, all others 1.5.

Comparison with savage languages is very difficult here on account of the lack of thorough knowledge of the etymological constitution of so many words of the vocabulary and the great variation in their form and use, but some commonly-repeated errors can now be corrected.

It has been common to deny to American aboriginal languages the possession of true nouns. Brinton states the case rightly when he says 'there is often no distinction between a noun and a verb other than the pronoun which governs it.' But often there are other distinctions (73, p. 320).

Dr J. H. Trumbull, deeply read in the philology of the Algonkian tongues, went too far when he declared every Indian name to be a verb, and that 'every Indian noun is not separable as a part of speech from the verb. Every name is not merely descriptive but predicative.' This statement is very justly criticised by Rev. A. G. Morice, who says: 'There are in Déné many nouns which have no relation whatever to the verb; nay, the great majority of them is altogether independent and therefore they are just as purely nominative as the English "house," "lake," "bear," etc.' Of the primary monosyllabic roots, comprising 'about two-fifths of the whole aggregate of nouns' in the Déné language, Father Morice tells us: 'They are essentially nominative; they neither define nor describe the objects they designate; they merely differentiate them from one another' (437, p. 176; p. 181).

Pronouns.—Professor Sully (625a, p. 178) rightly calls for carefully-noted data concerning the growth of the use of the pronouns in the speech of children; the lack of distinction of persons at a certain early period, however, and the long-continued state of confusion in the child's mind, have been generally recognised. Interesting in this connection are the following remarks of Dr D. G. Brinton (73, p. 396): 'You might suppose that this distinction, I mean that between *self* and *other*, between *I*, *thou* and *he*, is fundamental, that speech could not proceed without it. You would be mistaken. American languages furnish conclusive evidence that, for

unnumbered generations, mankind got along well enough without any such discrimination. One and the same monosyllable served for all three persons and both numbers. The meaning of this monosyllable was undoubtedly "any living being."' Here we get pretty close to the young child. The extraordinary development of the pronouns in many American languages—some have as many as eighteen different forms, as the person is contemplated as standing, lying, in motion, at rest, alone, in company, *etc.*—Dr Brinton regards as a recent outgrowth and development.

In his discussion of the Chinantec language of Mexico, Dr D. G. Brinton[1] cites some very interesting examples of the confusion of the personal pronouns in this primitive tongue: 'It is noteworthy that the pronoun of the third person, *quia*, may be used for either the second or the first in its possessive sense; thus *vi chaaqui quia*, "for his sins," instead of *vi chaaqui na*, as a translation of "for my sins." So again *animas quia* as a translation of "our souls."' As Dr Brinton notes, 'this is analogous to the language of children, who do not clearly distinguish persons, and often refer to themselves in forms of the third person instead of the first.'

Order of Words.—The order of words in the language of children and in the tongues of primitive peoples seems often to be almost entirely controlled by the necessity of speaking, and not by any logic of thought. Sully notes the frequency with which children place the subject after the predicate, the subject after the object, etc. (625a, p. 173). Dr Lukens, discussing the linguistic efforts of a twenty-six-months-old boy, whose *chef-d'œuvre* he cites, observes (377, p. 459): 'This example illustrates very strikingly the fact that, to the child at this stage, the order of the words is nothing. He wants to say it *all at once* anyhow, just as he thinks it all at once.' Brinton tells us (73, p. 405), concerning a very primitive South American Indian language: 'In some tongues, the Omagua of the Upper Orinoco, for example, there is no sort of connection between the verbal stem and its signs of tense, mode or person. They have not even any fixed order.' In not a few tongues of savage and barbarous peoples the adjective may precede or follow the word it qualifies, and adverbs often are equally unfixed.

Compound Words.—Compound words, in the speech of

[1] *Proc. Amer. Philos. Soc.*, Vol. XXX., 1892.

children and the tongues of primitive peoples, offer a suggestive field for comparison. Says Professor Sully (625a, p. 167): 'This process of differentiation and specialisation assumes an interesting form in a characteristic feature of the language-invention of both children and savages, *viz.*, the formation of compound words. These compounds are often true metaphors.' The order of the components is as varied in the speech of the savage as it is in that of the child, and the dictionary of the compound words used by any of our modern literary artists would contain not a few of the choicest productions of the child-mind in its young poetic fury.

Meanings. — Professor J. P. Postgate reports his little daughter as saying one day: 'I know three new words— "scandalous," "Matthew's man," and "pretty creature,"' and in the early stages of the individual, as of the race, the idea makes the word. *Rhemes*, as the author terms such 'words,' are the common property of children and savages; with both the word is a picture of the thing. These idea-words are the child's first epics and dramas, existing in gesture forms even before the advent of articulate language. Children and savages are the word-painters *par excellence*, and the field of their skill lies comparatively unexplored. For psychology, 'the science of meaning,' as Postgate calls it—onomatology, sematology—is almost virgin soil. Still a few data have been obtained, some the unsolicited offerings of the child's mental activities, others brought to light by the *questionnaire* method now so much in vogue (501, p. 408).

The 'Boy's Dictionary' of 215 words, published by Miss Fanny E. Wolff, of New York, contains abundant evidence of rheme-thinking, as may be seen from the following (689):—

Kiss is if you hug and kiss somebody.
Mast is what holds the sail up top of a ship.
Milk is something like cream.
Nail is something to put things together.
Nut is something with a shell good to eat.
Old is not new.
Open is if the door is not closed.
Opera is a house where you see men and ladies act.
Pickle is something green to eat.
Quarrel is if you began a little fight.
Ring is what you wear on your finger.
Saw is if you see something, after you see it you saw it.

Tall is if a tree is very big.
Ugly is if a thing is not nice at all.
Vain is if you always look in the glass.

The dictionary in question was, we are told, completed before his seventh year by a boy who had spent two years at a kindergarten, and was stimulated, doubtless, by the picture-blocks, of which he was very fond, since, in the manuscript, the words are often provided with rude illustrations. He was not an artist nor very imaginative, but took great delight in analysis and abstraction, qualities which, at the age of eleven, continue to characterise him, and even was fond of spelling. With this boy lexicographer may be contrasted as well as compared the Cherokee half-breed genius, George Guess, out of whose 'dreamy meditations,' and contemplation of the English alphabet—he could neither write nor speak English at the time—was born the famous syllabary by which the Cherokee and related dialects came to be written languages for native speakers. Imitation and originality mark both the word-expounder and the sound-recorder. On the Cherokee, perhaps, the spelling-book he gazed at so often exercised a much more potent influence than the dictionary that lay unused in the house of the boy.

In an exquisite little sketch of child-life by William Canton these definitions by a six-year-old girl occur (104, p. 487):—

Brain = What you think with in your head, and the more you think the more crinkles there are.
Dead = When you have left off breathing, and your heart stops also.
Flame = The power of the candle.

From France we have data of like import. Using always the same question (*Qu'est-ce que c'est?*), Binet (56) asked his two little girls (two-and-a-half and four-and-a-half years old) some fifteen times in the course of a year (an interval of five months being once left between two experiments) what they meant by certain words in common use, and wrote down the answers exactly as they were given. A few characteristic definitions are: A knife is to cut meat; a clock is to see the time; bread is to eat; a dog is to have by one; an arm-chair is to sit in; a garden is to walk in; a potato is to eat with meat; a bird means swallows; village means one sees everybody pass. M. Binet notes the lack of form-descriptions in

the children's answers, and the complete prevalence of utilitarian ideas—the use of the object fixing itself very early in the child's mind. That use and action are the guiding spirits of its lexicon appears also from the fact that of the 215 words in the 'Boy's Dictionary' cited above, 75 per cent. 'clearly express definite action.'

In Monterey County, California, with the assistance of the teachers and the approval of the school authorities, Professor Earl Barnes was enabled to carry on in 1892 somewhat extensive investigations on the lines suggested by Binet. The results, based on 50 examination-papers from boys and 50 from girls of each age between six and fifteen years (in all 2000 children sent in returns), which contained, as collated, 37,136 statements (girls 18,979, boys 18,136) about the 33 nouns, definitions of which had been requested. Here, again, it seems, the uses and activities of objects appeal to children before structure, form, colour, etc. Of definitions directly mentioning use the proportion (boys and girls together) for each of the years is as follows: 79.49 per cent., 62.95 per cent., 67.02 per cent., 63.83 per cent., 57.07 per cent., 43.81 per cent., 43.69 per cent., 33.74 per cent., 37.75 per cent., 30.62 per cent.—or, for all ages, 45.58 per cent. The proportion of statements of the type, 'a watch is a time-piece,' is, for all the years together (boys and girls), 15,09 per cent. Professor Barnes has examined the definitions (of the 33 nouns used in the investigation) given in 'Webster's Dictionary,' and finds that 'at fifteen there is about the same proportion between definitions of use [*e.g.*, "a clock is to tell the time"] and larger term [*e.g.*, "a clock is a time-piece"] that we find in "Webster," but the qualities are still much less developed.' The difference between the child and the adult as lexicographers comes out in the prominence given by the latter to form substance and structure in his definitions (33).

One cannot help thinking, however, that the dictionary-definitions often lie closer to the child's than those of individual adults, or of adults in general, recorded orally or in writing, since the lexicon in this respect, as well as in pronunciation, lags behind the common speech. Dictionary-definitions, too (since Dr Johnson's time, at least), are not the free, spontaneous product of adult thought, and hence other differences arise.

Very fruitful for psychological comparisons would be an examination of the earliest dictionaries of all languages, for child-like, indeed, were definitions when vocabulary-making was in its infancy. The English dictionaries of the Elizabethan age, and the Italian dictionaries of a little later epoch, contain much that is analogous with the material accumulated by the researches of Binet and Barnes. John Baret's *Alvearie* (1580), John Florio's *Worlde of Wordes* (1598), Minsheu's *Dictionary in Spanish and English* (1599), Huloet's *English Dictionary* (1552), and Withals' *Little Dictionary for Children* (1599)—the last especially,—are exceedingly interesting from a psychological standpoint in connection with the development of word-defining.

Name-Giving.—To exemplify the resemblances (and differences) between the meanings of words in child-speech, the language of our own Aryan ancestors, and of certain primitive peoples, the following table has been compiled by the present writer. It contains the meanings of some thirty words as given by two French children (from Binet), two American children (from Mrs Hogan), and the radical meanings of the corresponding words in French, English, German, and the Klamath, Algonkian, and Kootenay languages of the American Indians. It will be seen at a glance that there are individual differences in the significations given by children and those belonging to primitive tongues, dependent, in all cases, upon the diverse reactions to the stimulus of the object named. Physical, psychical, sociological, self and altruistic motives are all represented, and it might, perhaps, be said that these facts illustrate as much the general unity of the human mind among all races and all peoples, with its individual variations and diversities, as any marked resemblances or differences between the child-mind and the mind of primitive peoples, as evidenced by the 'science of meanings.' More than all else they seem to illustrate the great influence of the immediate and habitual environment, of which the savage naturally possesses a greater knowledge and has a keener appreciation than a child. The same remark would, perhaps, apply here, as in the case of drawing, that the observation-gift of the savage makes, as a rule, his dictionary a more picturesque, less monotonous, and more correct series of word-pictures than the child, in his early years, is ever capable of feeling and thinking out, much less of recording in words.

Table of Word-Meanings.

Authority:	Binet.	Binet.	A. F. C.	Hogan.	Hogan.	A. F. C.	A. F. C.	Gatschet.	Lacombe and Cuoq.	A. F. C.
Word.	French Girl $4\frac{1}{4}$-5 Years Old.	French Girl $2\frac{1}{2}$-$3\frac{1}{4}$ Years Old.	Radical Meaning of French Words.	American Boy 7 Years Old.	American Boy 7 Years Old.	Radical Meaning of English Words.	Radical Meaning of German Words.	Radical Meaning of Klamath Words.	Radical Meaning of Algonkian Words.	Radical Meaning of Kootenay Words.
Arm-chair	to sit in	to sit in	folding seat	wood	to sit in	arm-seat	lean-stand	what one sits on	what one sits on	arms and legs
Balloon	flies in air	flies in air	large ball	something to sail in the air	to take people up in the air with	large ball	air-ship	what flies up	what rises in air	what rises in air
Bird	flies	flies	..	something to sing	to fly	bred	what flies	wingèd	little flier	wingèd
Box	to put things in	to put things in	made of box-wood	something to put things in	..	made of box-wood	container	what one puts things in	made of wood	what things are carried in
Bread	something to eat	to eat with meat	what nourishes	..	..	prepared by fire	prepared by fire	what is dry	what is cut off in pieces	what is baked
Clock	to see what time it is	..	hanging	something to tell time	to tell time	bell	hour	sun	artificial sun	sun
Dog	to have with one	walks on four feet	catcher	something to bark	to bark	..	catcher	..	..	..
Doll	to play with	..	little baby	..	..	plaything	baby	..	plaything	plaything
Earth-worm	is dirty	one crushes it with the foot	ground-wriggler	something to dig the earth	to crawl	ground-wriggler	rain-wriggler	..	soft thing	..
Finger	to hold fork with	..	catcher	something to take hold of things with	to touch things with	seizer	seizer	..	..	branches
Flower	to pluck	to smell	what blooms	something pretty	it looks pretty	what blooms	what blooms	what is at the end	something white	..
Garden	to walk in	has flowers in	enclosure	vegetables	to grow things in	enclosure	enclosure	sown-place	sown field	what is dug

Handkerchief	to wipe nose	to wipe mouth	what one wipes mucus away with	something to blow your nose on	to wipe your nose on	hand head-cover	pocket-cloth	..	..	wiping instrument
Hat	to put on head	to put on head	little cover	some are cloth	to wear on your head	cover	cover	..	cover	..
Horse	to run	it bites	..	something to give you rides	to take out riding with	runner	runner	..	large dog; one hoof	large dog
House	something to live in	..	abiding-place	something to live in	so people can live in it	hiding-place	hiding-place	staying-place	round thing	..
Knife	something that cuts	to cut with	little cutter	..	..	nipper	meat-stone	thorn	cutter	flint
Lamp	..	..	what shines	something to make a light	to light	what shines	what shines	..	light-instrument	what makes light
Mamma	to watch over children	to spoil children	[onom.]	a person	to whip the naughty boys	[onom.]	[onom.]	[onom.]	[onom.]	[onom.]
Mouth	to eat with	..	hole	something to chew with	to eat with	chewer	chewer	..	..	..
Pencil	to write with	writes on a book	chalk	something to write with	to write with	small, little tail	lead-thorn	..	drawing-stick	what one writes with
Potatoes	something to eat with beans	to eat with meat	earth-apples	vegetables	to eat	..	earth-root	..	white root	..
Shoes	to put on	one walks with	little hollow things	something to wear on your feet	to wear	what one walks with	what one walks with	..	..	..
Snail	eats salad	shows his horns	slippery	little animal	to crawl up things	little creeper	creeper	..	twisted insect	mouth-foot
Sugar	to eat	to eat	gravel	something to eat, to put in tea or coffee	to make milk and everything sweet	gravel	gravel	..	what is made by pressure	sweet
Table	to put dinner on	to dine with	what is flat	something to eat off	to stand things on	what is flat	disc	what one eats from	what food is put on	what one eats from
Thread	to tie with	to draw horses with	little string	something to sew with	to sew	what is twisted	what is twisted	what is twisted	..	fibre of plant
Village	many people	..	..	something to live in	so people can live in it	..	crowd	staying-place	..	many houses
Water	to drink	to drink	what flows	..	..	what is wet	what is wet	..	..	..
Wolf	eats grown-up people & children	eats children	robber	something to eat you up	to bite people	robber	robber	..	tearer	..

Some of the actions of primitive peoples in novel situations, and their appreciations of new facts, bring them often into comparison with children. Of the Cree Indians of the Athabasca Territory in North-western Canada, we read:[1] 'Of all the animals the pigs astonish the Indians most. They call them *kokosh muskwa* (things like bears), and they are afraid of them more than if they really were bears. It is very amusing to see them running for all they are worth, and climbing up a rail fence just to get out of the way of one of these very harmless creatures. Nothing, however, amuses or interests the Indians more than the tame ducks; they cannot understand how it is the ducks should go down to the river, take a swim, and then go home and take food out of Mr Brick's hand.'

Bishop Bompas[2] observes, concerning the Indians who speak the Tukudh language (p. 98): 'All articles in use by the whites are named by the Indians without hesitation, according to their employment. A table is what you eat on; a chair, what you sit on; a pen, what you write with. A watch is called the sun's heart. A minister is with them the speaker, and a church the speaking-house. So a lion is called the hairy beast, and the camel the one with the big back. A bat is called the leather-wing because such is its appearance. Thus an Indian is never at a loss for a name. A steamboat, before it was seen by the Indians, used to be called the boat that flies by fire; but since they have seen it, the fire-boat seems to be name enough.' These Indians are 'quick at learning by the eye, but slow if taught by the ear'; even in matters of Christianity they would be 'better schooled by example than by precept.' The Tukudh would seem to be eye-minded. There is need for a careful study in psychological etymology in order to determine in how far savages are eye-minded, ear-minded, motor-minded.

Name and Thing.—Dr Friedrich Polle, in his interesting little book, *Folk-Thought about Language*, gives the following examples illustrative of children's ideas of the name and thing, and the relationship of these:—

1. A little German girl: 'When I am big and *am called mother* I shall cook giblets every day.'

[1] *Canad. Ind.*, Vol. I., 1891, p. 342.

[2] *Colonial Church History of the Diocese of the Mackenzie River*, London, 1888.

2. Six-year-old boy of Saxony: 'Who is going to be *Prince George* now?'—Said when he heard that, owing to the death of King John, the Prince Royal, Albert, would be king, and Prince George become Prince Royal.

3. An eight-year-old German girl: 'Do the people on Venus know that they live on Venus?'

4. A little German boy: 'Mama, do the animals know their names?'—'I'm glad of that—how ashamed the ox, the ass and the monkey would be!'

In the collections of children's sayings and questionings much more of the same import is recorded. To a child there is something in a name, and the 'it is' and 'it isn't' of children's plays and games represent a philosophy of the λόγος, akin in some respects to the religious word-cult of adolescence, and the battling for the word which has characterised most religions in the early stages of civilisation. Many of the versions of the famous 'it's a mouse,' 'it's a rat' contest of the married couple belong here also. The uncultured peasant and the uncontaminated savage seem sometimes to be in the same stage. The peasant's naïve question of the astronomers: 'How did you find out the names of the stars?' is all too common. Polle cites the following apt illustration: 'An Austrian, a Hungarian and an Italian were disputing about the beauty, etc., of their respective mother-tongues. The Austrian finally admitted that, while it might be uncertain which language was the most beautiful, there could be no doubt but German was the most correct. I'll prove it. You, Hungarian, what do you call the contents of this glass? *Viz.* And you, Italian? *Acqua.* Good, I like that. We call the contents of this glass *Wasser* (water), and not merely do we call it so, but it is *Wasser!*' The belief in a connection between name and thing lies on the surface here. As Dr Polle remarks, the illiterate peasant hardly believes in the actual existence of foreign languages, preferring to look upon even the most unintelligible of them as distortions of his own speech (499, pp. 24-27).

The savage, if the present writer's experience does not

deceive him, is less prone to take such views, either of particular words or of particular languages. He will admit that water can be named by another word than that which belongs to his own tongue, and will admit also the independent existence of other forms of speech than his own. There are many exceptions, but it requires, perhaps, the isolation of the peasant and his mental indolence, or a dash of civilisation, such as the earliest Greeks had, to deliberately use such expressions as *βάρβαροι* and the like. The use of language is too well understood by most primitive peoples to be so despised even when heard upon the lips of a stranger. In fact, the very multitude of languages in the earlier history of the race, and the nomadic character of many of the earliest groups of men, together with the great native ability for language acquirement, an art highly valued when other arts were 'few and far between,' tended to inspire interest in, or respect for, rather than despisal of alien speech. Woman's great share in the origin, development and diffusion of language — both her cosmopolitan and her conservative instincts — served in the same cause, and strengthened the feeling for the toleration of others' speech.

To the peasant the name *Wasser* means *water*, and in itself carries no specific characteristic of the object named. Both the child in his invented names and the ignorant peasant in his received names are often on an entirely different plane from that of the savage, with whom names are very frequently word-pictures of the things denoted by them. In the days when, as Max Müller has it, every root was significant, the associations these words evoked must have kept men from falling into the condition of the Austrian peasant.

Nevertheless, many savages do have the idea of the indissoluble oneness of name and thing, as the religion and mythologies of primitive races, and of our own, in the earlier stages of its existence, amply testify.

The folk-lore of the word, the primitive philosophy of the *λόγος*, is exhaustively treated by Ferdinand von Andrian in his essay on 'Word-superstitions' (9), where he has gathered together a mass of data from all ages and peoples relative to the nature and power of the word spoken and written, understood and unintelligible,

significant and meaningless, shouted and whispered, sacred and profane, old and new, harsh and gentle, alone and in a sentence, single and repeated, forwards and backwards, permanent and mutable, helpful and injurious—all evidencing the truth of the declaration of Freidank :—

> Krût, sterne, unde wort
> diu hânt an kreften grôzen hort.
>
> Herbs, stars, and words
> Of powers they have great hoards.

Words can take away the mind of man, the sharpness of the sword, the burning power of red-hot iron, make trees fall, mountains open, rocks move apart, rivers, lakes and seas divide. Words can bring fortune and ill-fortune, influence the gods, charm spirits, elfs and fairies, summon up and drive away imps and devils, still wind and wave or call them up again. Powerful, all-efficient is the mere utterance or use of the charm-word though priest, hunter, witch, lover know nothing of its real import. The word of the mouth and the word of the hand have gone on parallel lines, the meaning of the swastika is often as little understood as that of the 'open sesame.'

The French idioms whose *disjecta membra* appear in our modern novels and legislative addresses, the Latin in the ignorant physicians' prescriptions, the Sanskrit words written with Chinese signs by the Buddhists of the Celestial Empire, the mystic syllables handed on from one religion to another, the reverence of many existing savage and barbarous tribes for anything written, the inscribing, carving, and stamping of names in out-of-the-way and inaccessible places no less than in public and private haunts, all testify how far men still are from giving up all superstition of the kind suggested by the thought: 'In the beginning was the word, and the word was God.'

The 'magic of the word' often brings childhood and savagery, or, at least, barbarism, very close together; both the child and the primitive man, in the exuberant exercise of a new power, are word-worshippers, and words, with

meaning or without, are alike precious to both. It seems also that concomitant action (religious rites, games, political meetings, social gatherings, etc.), not only, as Noiré and others would have us believe, called forth language itself, but has also served to keep much of it primitive and almost unmeaning from the earliest ages down to the present time. Especially has this been the case when, by reason of the employment of adults in other ways, certain concomitant actions have been left altogether to children.

Between the folk, the savage and the child, the chief points of resemblance with respect to the various phenomena of word-use now under discussion seem to lie in the feeling for the power of the word, the frequent neglect of sense for sound, the keen sense of the belonging together of name and object or thing, person, or place named, the 'painful exactness' of formulas, and sometimes even of the minutiæ of pronunciation, accent, etc., the attribution of some knowledge of some sort of speech to everything in the world, the ingenuity displayed in the invention of nicknames, and the multiplication of the names of objects or persons liked or disliked, loved or feared, taboos, omissions, and suppressions of *the* names bad or good.

Speech Disturbances and Child-Speech.—Certain of the phenomena resulting from speech-disturbances in adults are, outwardly at least, identical with the language-play so common in young children. Of this type is often the 'verbigeration' common in patients suffering from katatonia, which, according to some authorities, resembles the chatter and word-repetitions of primitive peoples. Drs Peterson and Langdon,[1] in their study of katatonia, say concerning a woman of thirty-one: 'She began to recite all day long, every other day, with great rapidity, and with infinite variations, in rhymes of unintelligible words as follows: "Moccasins, voccasins, doccasins, crockasins, lockasins, tockasins, jockasins, hockasins; babies, tabies, gabies, habies, sabies, labies, mabies, kabies; nobis, gobis, jobis, chobis, sobis, pobis; tikater, fikater, sikater, likater, mikater," and so on, *ad infinitum*. She changed to another word only when the possibilities of rhymes were exhausted.' A few months later 'she gave up the rhyming

[1] *Med. Rec.*, N. Y., Vol. LII. p. 476.

assonances and returned to the old phrase, with occasional variations: "I want to go home to my children in New York; won't I be glad when I get home to my children in New York! What good times I'll have when I get home to my children in New York! . . . to my cosy home in New York . . . When I get into the car which takes me to my husband and children in New York." This was the refrain for many months, on alternate days, accompanied as before by rhythmic gestures of both arms in the supposed direction of New York.' Another patient, a man of fifty-five, had not spoken for three weeks, 'except to repeat constantly meaningless syllable combinations, like, "Oh! warmee, oh! warmee, oh! warmee; oh! huminum, oh! huminum, oh! huminum; oh! wow wow woro, oh! wow wow woro; oh! wody wody wody, oh! wody wody wody, oh! wody wody wody; oh! kody body, oh! kody body, oh! kody body; oh! widdy widdy, oh! widdy widdy; oh! hum yankum, oh! hum yank-um, oh! hum yank-um."' These words were uttered 'with greater or less rapidity, in varying keys and with strange gesticulations and great earnestness of manner for 15 or 20 minutes, when he would be silent for some hours and then start off with another combination.'

Dr Ales Hrdlicka (307, p. 385), who has made a special study of 'Art and Literature in the Mentally Abnormal,' based upon data obtained from various institutions for the feeble-minded, epileptic and insane in the State of New York, maintains that 'the insane or the epileptic genius is a thing largely of romance, or, at least, is not to be found in the state institutions for these classes of patients,' and therefore, 'the study of art and literature among the various classes of the mentally abnormal resolves itself principally into a study of the effects of the various abnormal mental conditions on the previously-acquired abilities of the individual, and, additionally, into a study of what can be effected by training with some classes of patients in these conditions.'

The neologisms of the insane, which have been studied by Tanzi (627), their compound words, nonsense-syllables, etc., offer another field for comparison with the speech-phenomena of children and of primitive peoples.

The soliloquy of the insane has been investigated very re-

cently by Professor A. Raggi,[1] who found it to be substantially the same in context with the ordinary language of the patient, and, except for excessive animation and gesture-action, differing in little from that of normal individuals. The soliloquy of the insane (not the result of artifice or simulation) differ from the other modes of speech in being disconnected with the purpose for which speech is meant to function. It occurs rather more often in women (40 per cent.) than in men (32 per cent.), and 'occurs both by day and by night most commonly, rarely by night alone, and is, perhaps, rarer rather than more frequent with the insane than with the sane during sleep.' Data for comparison of the soliloquy of the insane with the soliloquy of the child are not as yet forthcoming. The numerous studies of the various forms of aphasia and other disturbances of language have resulted in the accumulation of many facts, which have been held to make for the parallelism of certain linguistic phenomena in the child, the savage, and the patient whose speech-functions have been disturbed. It is maintained also that, in the gradual disappearance of language in the adult suffering from such linguistic disturbances, the more concrete, the latest-acquired parts of human language, are the first to be lost, the more abstract and symbolic, the latest and best organised, being the last to give way. Nouns disappear before verbs, adjectives, pronouns, adverbs, prepositions and conjunctions; and written language, of course, suffers more than oral speech (377, p. 425).

The existence of a parallel between the imperfections of the language of the learning child and the pathological phenomena in the speech of adults whose language-functions had been disturbed is stated by Preyer (511, p. 116) in the following terms:—

'When an adult, in consequence of a stroke of apoplexy, lesion, or any cerebral disease, disorder of hearing, derangement of the functions of the larynx, or of the tongue, lips, or even teeth, is deprived of the right use of speech, then the disturbances of speech which have been carefully observed by various clinicists are not merely somewhat similar in general, but are identical with those of the child just learning to speak.' The faults of speech in the adult here occur 'because his speech mechanicism is no longer normally constructed,' while the incorrectness of the child's speech and

[1] *Manicomio*, 1898, p. 421.

understanding of speech is due to the fact that 'his small speech apparatus is not yet fully developed in all its parts.'

Compayré (123, p. 213) also notes this 'striking parallel'; in all the forms of aphasia, 'whether by lesion of the organs, by enfeeblement of the intelligence, or by defect of will-control, the adult may relapse into those peculiarities, which, in the child, mark the first attempts at speech, and reproduce them in a sort of caricature'—but what is disease with the one is only lack of power with the other, and the progress of the child step by step up the grades of speech is as charming as the spectacle of the morbidly fatal despoilment of the adult of bit after bit of his language is painful. Between the two lies all the difference between decay and play; there is never quite a perfect resemblance between the logorrhœa of the insane and the chatter of the child, between the silence of the latter and that of the melancholiac—for human genius is ever in the child.

Dr H. T. Lukens (377, p. 427) has compiled the following table (based upon the data in Ross's *Aphasia* and upon the records of child-speech) to show the 'close agreement' between the progressive development of the speech-disturbances in the adult and the development of language with the learning child:—

Stage.	Adult (Aphemic).	Stage.	Child (Learning to Speak).
5	Grunting sounds, and syllabic utterances not forming any word.	I.	Automatic cries and reflex or impulsive sounds.
4	Occasional and recurring utterances of no speech value.	II.	Imitation of sound, but without meaning; child babbles back when addressed.
3	A few intelligent replies to questions in single words.	III.	Understands words, but does not yet speak beyond such words as 'mamma,' 'papa,' 'no,' etc.
2	Repetition of words and reading aloud.	IV.	Repeats words as signs when they are said to him.
1	Spontaneous vocal speech in sentences.	V.	Uses words to express his thoughts.

We need, however, more data for the thorough interpretation of this parallel between the child's progress from automatic and reflex (instinctive) phonetic heterogeneity to the thought-words, and that of the aphemic adult from the sentence to the wordless grunt, the progress of evolution and the regression of degeneracy. Some writers, upon uncertain evidence, have credited savage peoples with a form of speech belonging to the lowest group of stages indicated in the table above, but, so far as known, there exists no tribe of men upon the globe without a language much better organised than the beginning of the child's or the end of the adult's.

Vocabulary.—In his *Lectures on the English Language*, published in 1862, Professor G. P. Marsh made (p. 181) the statement that 'few writers or speakers use as many [words] as 10,000; ordinary persons of fair intelligence not above 3000 or 4000'; while occasionally one person might be able to use 50,000, or half of the English words then reckoned to be in vogue. This statement induced Professor E. S. Holden (301, p. 16) to make a careful inquiry into the state of his own vocabulary, taking a 'word' to be 'a symbol printed in capital letters in Webster's Dictionary, edition of 1852.' Marsh afterwards explained his 'word' to be the philological term, by virtue of which only the simple and not the inflected form of the vocables was counted. Holden's conclusion—he estimated his own at 33,456, and discovered that the vocabulary of the assistant librarian in the Patent Office was larger than his—was that '30,000 words is not at all an unusual vocabulary.' For comparative purposes he estimated the vocabulary of Shakespeare (minus all verbs spelled like nouns), from Mrs Clarke's *Concordance*, to amount to 24,000 words; Milton's, from Cleveland's *Concordance*, for the poems alone (the prose would give a larger number), 17,377; the English Bible, from Cruden's *Concordance*, 7209 (exclusive of proper names); Bosworth's *Dictionary of the Anglo-Saxon Language* (which contains 'few words not in full use before 1100 A.D.'), 11,913; Hotten's *Dictionary of Slang*, 10,000. Holden's conclusions have been verified, so far as the vocabulary of a professional man is concerned, and the statement can safely be made that 'many men have vocabularies of over 30,000 words.' There seems

little foundation then for the opinion, common at the time, that 'a child uses less than 1000 words, an ordinary man uses from 3000 to 4000, an accomplished writer about 10,000.'

Mr E. A. Kirkpatrick [1] estimates his vocabulary of words, whose meaning was known to him at sight, at 70,000 words, the number of really different words being about 35,000. Mr Kirkpatrick mentions the fact that the vocabularies of specialists are very large, 'a well-read botanist having a technical vocabulary of 10,000 words, and a zoologist an even greater number.' *Robinson Crusoe*, a book which 'children of ten to twelve years read with pleasure, and have pretty clear ideas of the meaning of nine out of ten of the words used in it,' contains not less than 5000 to 6000 words.

In his essay on 'Language and the Linguistic Method,' Professor S. S. Laurie made the following statement: 'In the child up to the eighth year the range of language is very small; he probably confines himself to not more than 150 words.' When criticised by Mr Salisbury for so extraordinary a statement, Professor Laurie offered the explanation that the idea was originally due to Max Müller, and he thought that 'the child probably confined himself to 150 words in ordinary conversation,' an observation which did not mend matters much. According to Mr Salisbury (561, p. 290), the carefully checked-off vocabulary of his little boy, when $5\frac{1}{2}$ years of age, consisted of 1528 'understandingly used' words, not counting participles and (except in the case of pronouns) inflected forms. Moreover, the mother's record of the same child's vocabulary, when 32 months old, counts up to 642 words.

The following list of words in child vocabularies, from Tracy's data, indicates the great variation existing between the number of words used by children of like ages, sexes, environments, etc. :—

Sex . . .	—	—	—	—	B.	B.	B.	B.	B.	B.	G.	G.	G.	G.	G.	G.	G.	G.	G.	G.
Age (months)	9	12	12	15	12	19	24	24†	28	30	17	21	22	22	23	24	24	25	27	28
Vocabulary .	9	10	8	0	4	144	139	285†	677	327†	35	177	28	69	136	36	263	250	171	451

[1] *Science*, Aug. 21, 1891, p. 107.

Preyer (511, p. 120), from the examination of the vocabularies of nine children (girls 8, boy 1) two years of age, found the number of independent words used by them to vary from a minimum of 173 to a maximum of 1121.

Many of the strange ideas concerning the languages of primitive peoples are to be traced back to the comparative philologists, who write of the scanty vocabulary of miners and peasants, and of savage peoples who cannot speak in the dark because their gestures could not be seen. Max Müller, *e.g.*, while he admits that the English Dictionary contains 250,000 words, holds that 'for all the ordinary purposes of life a dictionary of 4000 words would be sufficient,' and that 'most of us never use more than 3000 or 4000 words, and we are assured that there are peasants who never use more than 300 or 400.' To be sure, he says likewise (450, p. 11): 'This does not mean that they would not understand more than that number, for the Bible which they hear in church contains about 6000 words. These they would understand more or less accurately, though they would never think of using them.'

Vocabularies of Primitive Speech.—How utterly unfounded some of these ideas are, even a casual glance at the lexicographical results of the philological researches among the American aborigines alone would serve to show. The approximate number of words in certain Indian dictionaries is as follows: Navaho (Matthews, 1891), 10,000; Cree (Végréville, 1865-1879), 17,000; Montagnais (Végréville, 1891), 18,000; Dakota (Riggs, 1852-188—), 20,000; Cegiha (Dorsey, 188—), 20,000; Blackfoot (Maclean, 1887), 25,000; Tuskarora (Hewitt, 1886), 30,000; Micmac (Rand, 1849-1894), 30,000; Yahgan (Bridges, 188—), 40,000; etc. Certain writers, like Keane (322, p. 49), have seen fit to think that some of these primitive peoples are 'strangely credited' with such vocabularies, but the reading of Mr Hale's excellent discussion of 'Language as a Test of Mental Capacity' ought to reconcile them to the right view of the case. In fact, the estimates in question err in being too small rather than too large.

How incomplete some of these dictionaries really are,

can be seen from the confessions of the authors. Of his Cree dictionary, Father Végréville observes: 'Many words which might have been included have been purposely omitted because of their simple and easy formation by means of rules given in the grammar' (Pilling), and Végréville speaks of his dictionary of the Montagnais (an Athapascan dialect) as 'containing about 18,000 words, out of which one might form more than 100,000 by means of the rules laid down in the grammar, third part.' Father A. G. Morice's dictionary of the verbs of the Carrier (an Athapascan dialect) language, though embracing, at the time noted by Pilling,[1] only *a—c*, covered 128 pages, small quarto; while his 96-page 'grammar of the conjugable parts of speech of the Carrier tongue' contained 'four chapters, subdivided into 19 articles and 132 rules.' Dr Anchorena, in his grammar of the Kechua language of Peru, gives over 600 modifications of the infinitive of the verb *munay*, 'to love,' formed by the infixation of particles, or the modification of the vowels of the theme; while the Abbé Férard, author of a MS. dictionary of the Ojibwa language, informs us that 'the number of the roots [in Ojibwa a root is properly the qualificative applied to natural objects to specify them] amounts to about 1300,' while 'the number of natural objects known to the Indians, and employed in composition, that is, specified by a qualificative, amounts to about 445 (493, p. 192); and we have, besides, all the derivative meanings of the roots and the composite words which go to make up the newer portions of the vocabulary.'

Rev. A. G. Morice finds among his 370 Déné roots separate terms for 'the lying down (verbs)' of—(1) living animals; (2) lifeless animals and their empty skins; (3) one single object with no striking characteristic; (4) several non-particularised objects; (5) soft things (linen, tanned skins, etc.); (6) granulous things (sand, sugar, etc.); (7) long objects, like wood; (8) round (but single) objects; (9) liquid objects; (10) coagulated objects; (11) objects in an uncovered recipient. In the ordinary everyday vocabulary of the various dialects of the Athapascan family of speech there exists 'a prodigious exuberance

[1] *Athap. Bibl.*, p. 73.

of differentiating forms.' Father Morice, to whom the Carrier dialect is almost his mother-tongue, assures us that 'in spite of its 150,000 or so verbal terms, the Carrier vocabulary does not contain a single genuine equivalent for "brisé (être), to be broken."' But it possesses instead 'no less than 110 particularising substitutes, not one of which could be indifferently used for the other.' These 110 verbs, we are told, have reference to—'(1) The object employed to operate the breakage, viz., the fists or the feet, a stick, or a whip, or of the cause of such action, as the wind, the explosion of fire-arms, etc.); (2) the manner in which the object has been affected, that is, whether it has been broken in one place or in many, by the middle or otherwise, purposely or by accident, violently or by gentle pressure; (3) the form of the object qualified, that is, whether it is elongated or spheroid, occupying a vast place or not, etc.' Besides all this, each of these 110 distinct verbs 'can be multiplied by four or five, according as we give them the iterative, initiative, terminative, etc., forms, whereby their signification is also unchanged.' And other verbs rival, and often greatly exceed 'in the variety of their forms and the precision and nicety of their distinctions,' the one just noticed —the verbs of locomotion especially. Says Father Morice: 'The single paradigm of the verb "to go" includes in my dictionary verbs that are totally different according as to whether the locomotion thereby expressed takes place on two or on four feet; by running or hopping; tottering as a drunk man, or with the help of a staff; creeping like a snake, or jumping as a frog; swimming or floating; "packing" or skating; playing or in a state of madness; whistling or speaking; singing or grumbling; laughing or weeping; in sleigh or canoe; paddling or sailing; diving down or in parallel line with the surface of the water, etc.; also according as to whether the movement is that of an empty canoe, or that of the sun, the stars, the clouds, the wind, the snow, the rain, the water, the earth (*i.e.*, relatively to a person drifting down stream), the fire, smoke, fog, ghosts, human mind, featherdown, diseases, news, etc.; or, again, whether it is that of an object elongated or spheroid, heavy or light, liquid or

liquifiable, granulated, massive, soft, etc., etc.' And further, all these verbs are modifiable according to where the motion takes place (in fire, in water, etc.). Lastly, 'by giving them the negative, usitative, causative, causative-potential, defective, reciprocal, initiative, terminative and iterative forms, each and every one of them will thus be multiplied by the number of forms assumed.' This 'fecundity of the locomotive verbal stems' is surpassed by the 'prodigious particularising power evidenced by the objective verbs.' Of one of these, Father Morice observes: 'The single paradigm of the verb "to put" contains in my dictionary (which could be more complete) over 3000 verbs, all of which differ in meaning as well as in material structure. And this number is repeated in connection with almost all the other objective verbs, which are quite numerous!'

Contents of Children's Minds.—What a contrast between this infinite variety, which seems never to stale, and the monotonous, all-inclusive 'There it goes' of the English boy, and the 'Fix it' of the American. A parallel between the Indian (adult or young) and the civilised child is hardly possible here, nor does the 'everything goes' of the slang-minded help us out. Had not Father Morice dwelt among these Indians for more than a dozen years, and did he not think in the aboriginal speech, and 'speak Carrier more fluently than English, or even my native French,' we should be astounded when he declares that 'a child four or five years old possesses these innumerable vocables well nigh as perfectly as does his father, and knows his intricate language infinitely better than any French academician does his own plain and easy mother-tongue' (437, pp. 178-181). A study of the 'contents of the minds of Déné children would certainly reveal much of interest to the psychologist.'

Professor A. Budilowski, after a careful investigation of the Slavonic speech in its historical development, attributes to the 'primitive Slavonic' 575 root-ideas, distributed thus:—Cosmography, meteorology, physics, geography, 102; mineralogy, 19; botany, 185; zoology, 137; anatomy and physiology of animals, 90; medicine, 32.[1] Souché's col-

[1] *Arch. f. Anthr.*, XII. 396.

lection of French proverbs, popular sayings, etc., contains 638 sayings, of which 238 refer to animals, 49 to plants, 209 to man, 41 to agriculture, weather, etc., and 41 to health. We are without corresponding collections for many primitive peoples, but they scarcely suffer in the comparison, judged by the volumes of African Negro, Malay and Dravidian lore already published. Mrs Bergen's valuable books on *Popular Superstitions*, and *Animal and Plant Lore*, show the extent to which the child of European ancestry has, in America, made himself familiar with many things in nature, as the Red Indian did before him. The vocabulary he makes himself in this communion with nature often surprises parents and teachers, who find his control of words otherwise so small, and his knowledge of other things like it.

Child as Language Learner.—The chief points emphasised by Egger in his study of the development of intelligence and language in the child are:—1. The child in the bosom of its mother has only a borrowed life; he takes possession of new life by acts which reveal the animal. 2. The dawn of real intelligence comes with laughter. 3. The teacherless child [in the beginning] learns quickest and best, memory and attention being more than reason. 4. The child's acquisition of our language means the unlearning of his own. 5. Children understand much before they speak little, or at all. 6. Children are very faithful to the music of language, respecting the rule of accent more than any other. 7. The mind is *the* thing in the child. 8. When we call the child a little man we are right, for life is complete at this early age, neither adolescence nor maturity bringing anything essential to its nature, nor introducing into its reason any new principle, into its intelligence any new faculty. Age does nothing but develop the pre-existing forces of the mind. There are many interesting truths in this outline, although the author goes out of his way somewhat to call the child 'a little man,' to whom nothing essential is afterwards added. One can often agree with Egger because he saw so much of the real development of the child. The fact that the child in learning our language unlearns his own, is of great importance. In a certain sense one might generalise and say that language in the child, as a living and lasting thing, is 'born of imitation,' and just as the child seems prone to choose a profession below that of his

parents, when inquiry as to his early choice is made his language bears the same stamp of inferiority. The social factor, after all, is perhaps the one most powerful, alike in repressing the child's animality of speech, and in furthering his humanity of language.

But not all the child's original language perishes utterly even with us. It is worth noting that many of the innovations and changes which make themselves felt in the living languages to-day, have, as of old, the child-mark upon them—those things against which the 'purists' rage in vain, and of which excellent examples may be found in Émile Deschamel's 'Deformations of French,' and Theodor Mathias's 'Speech-life and Speech-faults.' The child's predilection for slang and linguistic 'short-cuts' is in a way justified by the history of the race.

From what has gone before, one can see how far right and how far wrong is Dr Hermann Gutzmann in the parallel he seeks to establish between the speech of children and the languages of primitive peoples. This parallel is, in brief, as follows (261) :—

A. Phonetic: 1. Reduplication. 2. Early use of nasals by children, and their very common preference by certain savage peoples. 3. Use at first of explosives for fricatives, as with primitive peoples. 4. Late appearance of the sibilants of the second articulation-system, and their absence in many savage languages (*e.g.*, certain Polynesian tongues). 5. Use and substitution of *l* and *r*. 6. Interchange of *k* and *t*. 7. Early occurrence of 'clicks,' and their appearance in certain primitive tongues.

B. Speech-form and speech-content: 1. Limited vocabulary, making necessary the aid of gesture and pantomime. 2. Method of narration, with its predilection for minutiæ and incidentals (the child here closely resembles the negro and the Bakairí of Brazil). 3. Counting. 4. The possession, at first, of only designations for individual objects, and the lack, or rare occurrence, of collective names. 9. Drawing.

Some interesting points remain to be discussed concerning oral and written speech.

Written Language.—Drawing is only a primitive way of writing, and might naturally be supposed to be related in its development to the evolution of speech in the child. The parallelism in the stages of development of language and

drawing is indicated in the following table compiled by Dr Lukens (378, p. 86):—

Development of Drawing.	Stage.	Development of Speech.
Automatic and aimless scribble.	I.	Automatic cries and reflex or impulsive sounds.
Scribbling localisations and imitations of movements of other persons' hands.	II.	Imitation of sound, but without meaning; child babbles back when addressed.
Understands pictures, but does not yet draw beyond the simplest localisation of features by scribbling.	III.	Understands words, but does not yet speak beyond such words as 'mamma,' 'papa,' 'no,' etc.
Copies from others to see how to get the right effect in the use of lines.	IV.	Repeats words as mere sounds when they are said to him. (Brief stage and of little importance.)
Picture-writing, illustrated stories, scenes, etc.	V.	Uses words to express his thoughts.
Studies technique of drawing—perspective, proportion, shading, etc.	VI.	Studies grammar and rhetoric.

Dr P. Marie, in his psychiatrical study of the evolution of language, emphasises the fact that, while the oral forms of speech 'enjoyed a pre-formed centre in the brain, the written forms had to be content with an adapted one'—there being no real separate centre in the brain for written as contrasted with spoken language, much less each modality of language. Written language naturally follows and is prepared for by spoken language in the history of the individual, as also in that of the race (400).

Reading and Writing.—Professor G. T. W. Patrick, of the University of Iowa, arguing upon neurological, psychological and anthropological grounds, protests against the 'worship of the reading-book, spelling-book, copy-book and dictionary,' now so prevalent in the primary schools, with their favouring of lax methods of study, weakening of memory and retentive power (475, p. 361). He advises, therefore, the postponement of the teaching of reading and writing in the schools until after the child is ten years of age. The child ought to follow the race-history; man has only recently become a reading and a writing animal, and still

feels the strain of his adaptation. The child at the age in question is no more mature than the race was when the accommodation to reading and writing began, and naturally rebels somewhat at the sedentary habits, manual dexterity, finely co-ordinated movements, lessened memory, increased subjectivity, reflection, deliberation, reason, etc., of the school and civilised life. To cite Patrick's own summary: 'It will demand a considerable maturity in the child before he is ready for that which has developed so late in the history of the race. The language of the child, like that of the primitive man, is the language of the ear and tongue. The child is a talking and hearing animal. He is ear-minded. There has been in the history of civilisation a steady development toward the preponderating use of the higher senses, culminating with the eye. The average adult civilised man is now strongly eye-minded, but it is necessary to go back only to the time of the ancient Greeks to find a decidedly relative ear-mindedness. Few laboratory researches have been made upon the relative rapidity of development of the special senses in children, but such as have been made tend to confirm the indications of the "culture-epochs" theory, and to show that the auditory centres develop earlier than the visual.'

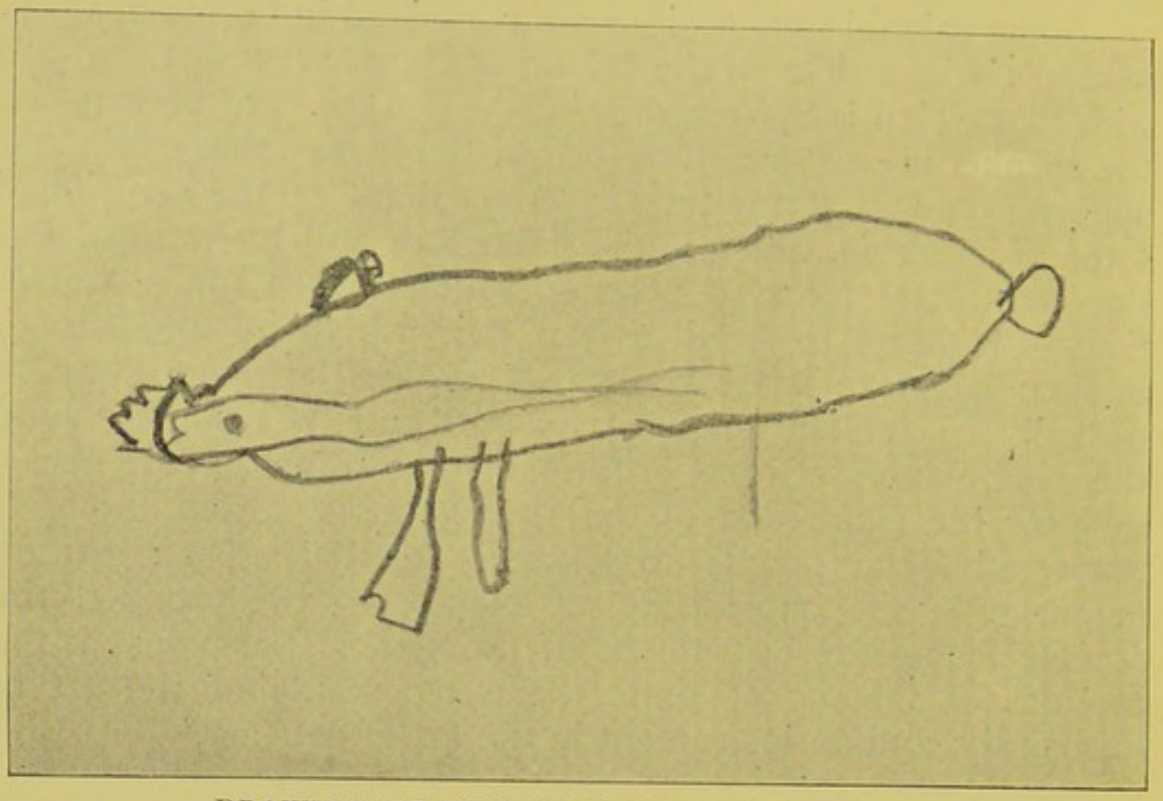
Moreover, the period from seven to eleven years is that in which the child may with most economy 'gain a lasting knowledge of a foreign language.' Mr Street, in his discussion of 'Language Teaching' (618, p. 289), emphasises this point also, when he observes: 'By the time the child is ten' [having begun about 5-7] 'he will have a sufficient grasp of one foreign tongue to permit the introduction of a second.' Patrick's contention that several languages may be learned orally by the child before he is set to read or write his own or any tongue gains some support from the race analogy. Polyglot speakers are very common indeed among primitive peoples. To bind the child too early to the restraints compelled by writing especially is to diminish unduly the great and useful *rôle* played in the normal life of the child by talking, shouting, singing, laughing, crying, and even sighing and yawning, which are all, as Dr Harry Campbell has pointed out, aids to health and well-being of the highest importance. The too frequent repression of physiological exertions, such as most of these phenomena usually are, involving respiratory exercise, blood-circulation, rhythmic compression and dilation of the

pelvic viscera, etc.,—which carry with them expenditures of neuro-muscular energy and induce psychic phenomena, which, in their turn, have their physiological accompaniments,—causes the child to suffer as much as would the savage who is similarly given to these natural vents of feeling and emotion. The child ought to talk much and talk well before he is forced to write—so often to write only badly.

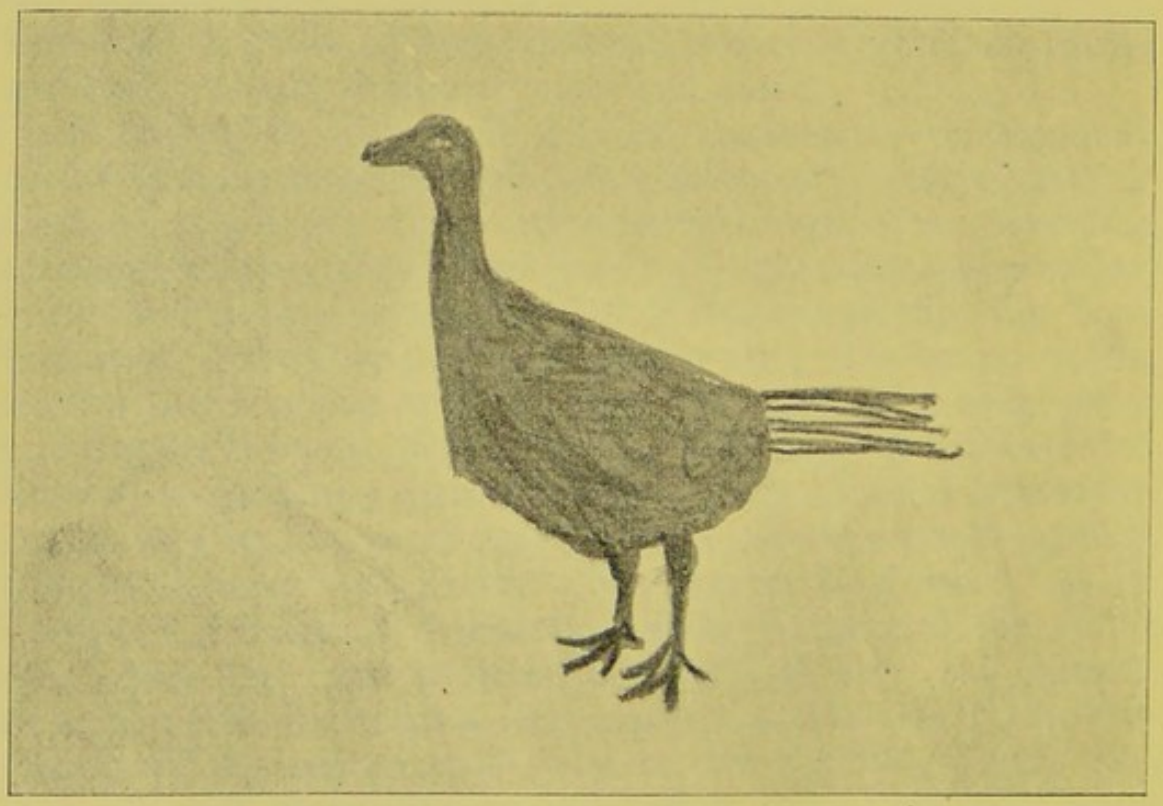
Talking has always been one of the most healthy and beneficial human exercises, and in vocal utterances as compared with writing there is more play of the physical effects of thought (as Dr Harry Campbell has observed), and modifications of voice and gesture are almost infinite. Talking, indeed, makes up in great part for lack of physical exercise, and not a little of woman's health in all lands and in all ages is owing to the fact that, especially among primitive peoples, she is the linguist, the constant talker, if not the orator *par excellence*. It is also one of the greatest defences of childhood. Dr Campbell does not hesitate to say that the stimulative effect of 'animated conversation,' and the exercise of talking as an art, enables lawyers, ministers, teachers, statesmen, etc., to get along without the gymnasium and the other artificial stimuli of the present day, and that, moreover, talking is distinctly favourable to longevity, beneficial in cases of heart disease, and only really exhaustive and dangerous in those nervously run down.

Shouting, Dr Campbell tells us, favours the development of the lungs, accelerating the circulation of the blood and increasing the depth of the respiratory movements. Shouting and gesticulation (Hughlings-Jackson would add even swearing) have often markedly beneficial physiological effects; the 'outbreaks of irritability in disease (gout, etc.)' are by no means always pathological in their effects, while it is a well-known fact that in children (and often adults as well) 'passionate outbursts are generally succeeded by periods of good behaviour, and, it may be, improved health.' As a pain-reliever the shriek, the groan, have been known since the birth of man. As Dr Campbell remarks, the varieties of the shout and the shriek are legion, and 'the shout of the child at play, the hurrahs of applauding multitudes, the cry of the huntsman, the war-whoop of the savage, the yells of an attacking force,' etc., may all dull sensibility or produce a state bordering upon ecstasy. And the child ought to have the full benefit of what is good in all this at the most natural time.

Some valuable suggestions are contained in Professor O. T. Mason's brief article on the 'Comparison of Written Language with that which is Spoken only' (415, p. 139). In oral speech the speaker is creator and destroyer, the hearer, preserver; and spoken language at any time is the resultant of the centrifugal force of speaking, which initiates changes and alterations, and the centripetal force of hearing, which makes for conservatism—the desire to speak at will, the wish to be understood. Spoken language is ear-controlled, written language eye-controlled. In spoken language memory and its resources hold the combinations of roots or fundamental forms that are necessary for the expression of the variety of ideas and thoughts possessed by a people in savagery or barbarism; written language is the subsidising of memory—'the product, the receptacle and the instrument of thought, just as a vase is the product of the art of pottery, the receptable of the art of husbandry, and an instrument in the art of cookery.'



DRAWING OF HEN BY SIX-YEAR-OLD CHILD.



DRAWING OF GROUSE BY KOOTENAY INDIAN.

CHAPTER VI

THE ARTS OF CHILDHOOD

ACCORDING to Miss Paola Lombroso (369, p. 137), there exists 'an interesting parallel, or analogy, between the way in which the child begins to speak and to discourse, and the way in which he begins to compose and write.' When he is beginning to speak the child 'expresses himself in mere sketches of ideas, truncated simple propositions,' succeeding only by slow degrees in expressing himself clearly and correctly; and when (at five or six years of age) he begins to compose and to write, he has to re-traverse the same road by the same stages. The themes and school-writings of young children abundantly prove this. As the same author says (369, p. 138): 'A child of six years, who already will make *vivâ voce* observations and statements of great skill, feels the need of mincing in detail the impressions which he has to express in writing, of simplifying them by repetition and detail.' There does not seem, in fact, to exist any correspondence between the intellectual manifestations of children at the age of from five to seven years and their writings at the same period of life; the child who speaks correctly enough stumbles and hesitates when he comes to write. As Miss Lombroso remarks: 'Just as in the early times of speech, when the child thought of the word *boat*, he had in mind some particular *boat*, so, when he comes to write a letter, he has in mind some letter written by the teacher, and it is a long time before he comes to write a letter automatically.' Moreover, 'just as the child at first in speaking resorts to gesture, and tries only to express simple ideas with concrete words (nouns, adjective, verbs,—only gradually introducing adverbs, articles, copulas, etc.), so also in beginning to write he expresses simple relations and schematic observations.' The difficulties in the way of learning to set one's thoughts down in writing emphasise the position taken by Professor

Patrick, which seems also to be supported by Mosso, the great Italian physiologist.

Origin of Music.—From language to music is hardly even a step, if we accept the theories of some authorities. Wallaschek, following Galton's and Weismann's theory of the non-heredity of acquired variations, seeks to 'explain the progress in music' [*e.g.*, the rapid progress during the present century, especially during the last thirty years] 'by tradition and imitation,' its origin and development, as a necessary incident of savage and barbarous life, having been due to natural selection —the musical faculty serving to organise the masses and facilitate association in acting. The play in peace-time turns readily to useful ability in times of need or war (674, p. 294). Music, like moral development, the instincts of birds, etc., is perpetuated and improved by tradition and imitation—in accordance with the principle of 'objective heredity,' as Wallaschek terms it, by which, *e.g.*, 'every progression in music is at once imitated and preserved objectively for later generations' (674, p. 269); Wallaschek finds the ultimate origin of music in the 'rhythmical impulse in man'—musical effects, however, not consisting in rhythmical movement *per se*, for 'innumerable ideas and feelings become associated with it, and give rise to those emotions which we on hearing it experience.' The sense of rhythm arises 'from the general appetite for exercise,' a desire whose 'rhythmical form is due to sociological as well as psychological conditions.' That music grew out of speech (as Darwin and Spencer have maintained) Wallaschek does not believe, and he also rejects the view of the origin of music which sees its rise in the bird's song of love (a device to charm the opposite sex), which reaches its acme in man. Some facts brought out by Hudson and other naturalists are held to weaken the bird love-song theory, which makes music the product of sexual selection. If music be related to speech as drawing to writing, the problem of its origin and development needs much further study and investigation. Its growth, certainly, has not been synchronous and co-equal with that of language.

Music with the Savage and the Child.—Music, according to Major J. W. Powell, whose presidential address before the American Association at Toronto, in 1889, was devoted to the consideration of the 'Evolution of Music from Dance to Symphony,' has only in the course of long ages come to be 'the language of the emotions kindled by the glories of the

universe.' Very late, with the slow growth of culture and human reason, have appreciation of the beauties of nature and its expression in music come to be. Of the pains and pleasures, the joys and sorrows of mankind, and not of the music of nature was the art of music born. Its first origins are lost in the mist of prehistoric times. Out of the dance, the earliest known æsthetic art, sprang music, and the dance 'has its foundation in the physical constitution of man; it is the expression of the joy of animal life.' From the dance, the art of the rhythm of mere existence, to music, the art of the rhythm of living in the highest human sense, is a long road. The stages in the growth of music in the race at large, and they are the same in the growth of the individual, have, Major Powell says, been four, 'music as rhythm, music as melody, music as harmony, music as symphony'; music has developed from the emotional nature of man, as philosophy has from his intellectual nature. The origin of these four stages is thus explained: 'Rhythm was born of the dance, melody was born of poetry, harmony was born of drama, symphony was born of science. The motive of rhythmic music was biotic exaltation; the motive of melody was social exaltation; the motive of harmony was religious exaltation; the motive of symphony is æsthetic exaltation.' Music began with the activity innate in man—'when the rhythm of motion became the rhythm of emotion.' Both the beginnings of music and of musical instruments are bound up with the dance. The dances of the savage world (sylvan rather than savage, Major Powell writes), merry, hearty, rollicking and joyous, find their modern representatives in the ring-games and other plays of children recorded by Mr Newell and Mrs Gomme: 'Blue-eyed children play with the brown-eyed, and brown-eyed children play with the black-eyed, and then all join hands and play "ring-around-a-rosy"; and out of this childish sport, by minute increments, musical rhythm becomes.' And the dance made primitive men one as it now makes children one.

By-and-by, as we see again from the games of the children of to-day, the expression of the emotions in the dance rises to the dignity of speech: 'The leader repeats the words and the people chant the refrain, and more and more he gains a freedom in composition, and he varies his chant with new sentences, iterating and reiterating the emotional theme. In this way poetry becomes, and we have dancing-master poets and dance

songs. As the dancing-master poet varies his theme of poetry so he varies his theme of music, and melody becomes. Poetry and melody are twins born of the dancing chant. Thus it is that "ring-around-a-rosy" becomes a song.'

The nonsense-words, unmeaning syllables and uncouth sentences of our children's game-songs find their parallels in the same phenomena of savagery, and tell of the ages that passed before music and poetry came really 'to live together,' before the song which 'expressed the joy of exuberant emotion,' was rightly married to the dance which 'expressed the joy of exuberant life.'

As men rise from savagery through barbarism, poetry is more and more released from Terpsichorean feet, and soars into the realm of ideal emotion. Now men, women, children, sing as they labour: 'Priests sing as they perform religious rites, women sing as they grind at the mill, children sing at their sports.'

Harmony, too, gradually develops out of the grouping of voices in folk-singing: 'The notes of man are low and resonant like the voices of waves and winds; the notes of women are high and clear like the voices of birds; while children pipe like bees.' In savagery, also, Major Powell tells us, the drama begins, and to suit the actors harmonious parts are developed in the singing,—for the drama is only the story of creation sung,—and full-fledged harmony ultimately appears. Again, the song-games of children recall the dramatised myths of the primitive peoples of all lands. Music has now become, with innumerable variations, both profane and sacred, and runs the gamut of all human feelings and emotions.

At last science comes and gives music 'a multitude of sweet instruments' and power, 'kindled by the higher intellectual faculties,' to appreciate all that is good, beautiful and true in Nature and in Nature's work, in man and in the works and thoughts, the dreams and ideals of man. Now 'the "ring-around-a-rosy" has become a symphony,' its accompaniment a sublime poem.

The child, dancing with delight when he receives a present, or whistling to keep his courage up as he goes through a dark forest, or along a gloomy lane, represents that age of the race when 'they danced to their gods, and beat their drums to their gods, and played their whistles to their gods, and blew their horns to their gods, until the winds stilled, and the storms

abated, and the lightnings went out, and the thunders hushed, and the floods ran away to the sea, and then they rejoiced with flashing and dancing and music.'

The boy of to-day with his noisy 'bull-roarer' is the time-softened embodiment of our ancestors in the days when 'a group of naked, savage warriors, intent on plunder, rapine, and the midnight murder of men, women and children, gather about the camp-fire in the weird dance, and leap and howl and whip their bull-roarer until they work themselves into a state of fury.' The children, whistling or singing to dull the toothache, or chanting in chorus to drown the cries or alleviate the pain of a companion, take us back to the time when men 'by shrill shrieks, by mad howling and by horrid imprecation' sought to drive away the disease-producing spirits, or by the dance, music and the chant 'called for the beneficent spirits.' They take us back to the time of which it may be said: Dance and music are the quinine and calomel of the savage—the 'water cure,' the 'faith cure,' the 'blue glass cure,' the 'mind cure,' the 'Christian science cure,' the 'youth-restoring elixir,' the 'panacea for all human ills.'

When to-day the ring of children dances around a comrade who has been hurt, or who does not feel well, they are exercising the therapeutic art of music known to every primitive race and praised in the annals of medicine from Æsculapius to Dr Maillet (197, p. 339). The old incantation and drum-beating have not yet lost their strength altogether, the 'charm' of music still seems to soothe (as well as to excite) and to cure others than the child and the savage. Concerning this much may be read in the book of Honnet, published in 1874, on the *Effects and Influence of Music in Health and in Disease*, and many subsequent articles and essays.

Effects of Music.—Some of the more recent literature on the faculty of music and its pathology has been well summarised by Dr G. C. Ferrari (197), while to the same investigator, together with Dr C. Bernardini (50), we owe some interesting experiments on the musical memory of idiots.

Sollier, in his work on the psychology of the idiot and the imbecile, mentions the curious fact that 'a liking for music is the only artistic trait' that these true proletarians of intelligence,' as Ferrari terms them, possess; and he attributes it to the 'sensual' character of music. Twenty years before, Hughlings-Jackson had observed that 'idiotic children, who were

not mutes, could pronounce singing a larger number of words than they were generally able to do speaking,' and in 1890 Knoblauch pointed out that 'aphasic subjects' (not idiotic) were, under the excitement of music, able to pronounce words which they were absolutely unable to utter without such stimulus' (197, p. 316).

Experiment on a large scale began in 1889 with Wildermuth, who investigated the musical sense of 180 idiots (and imbeciles) and 82 normal children (boys). Ranking his subjects in four classes from those having 'a good musical disposition' to those characterised by 'musical incapacity,' he found the proportions from good to bad as follows: Idiots, 27 per cent., 36 per cent., 26 per cent., 11 per cent.; normal children, 60 per cent., 27 per cent., 11 per cent., 2 per cent. In other words, a large proportion (nearly one-third) of the idiots possessed 'a good disposition for music,' and only 11 per cent. (as compared with 2 per cent. of the normals) were absolutely without musical ability. Moreover, as Ferrari remarks, the normal children were taken from a country (Germany) whose inhabitants have generally a good musical ear, and the majority of them, unlike the idiots, had received a certain measure of systematical musical instruction.

Ireland,[1] in his study of the musical faculty in cerebral diseases, found that idiots, as a rule, like to listen to music, and, moreover, that even mute idiots sometimes give forth musical motives, while idiots belonging to families of which many members have musical dispositions, share in the passion for music. Dr Ireland's statement that in mental disease the musical faculties are the last to disappear, is, as Ferrari points out (197, p. 336), contradicted by the results of Dr Legge, who shows that the musical faculty in dements disappears with the other æsthetic sentiments before the complete diminution of the mental powers. Dr Legge's researches were published in 1894,[2] and dealt with the musical faculty of 50 idiots. Of these 30 took some interest in hearing music, while 20 showed themselves altogether indifferent; 15 could repeat certain tones without words, and 9 repeated them with words. We are told further that 5 could articulate words well, but did not at all comprehend them, while 1 was a deaf

[1] *Journ. Ment. Sci.*, 1894. [2] *Journ. Ment. Sci.*, p. 373.

mute. This last once repeated a note made by one of his companions, and, although in the lowest depths of idiocy, he seemed to take pleasure in hearing music, whilst preserving an utter indifference to the noise going on about him.

The experiments of Bernardini and Ferrari on the memory for music (notes and phrases sung to the subject early in the morning almost immediately after the first meal) of idiots were carried out on two occasions (20-30 days apart) upon 60 males and 40 females in the Psychiatric Institute of Reggio, Italy. The general results were as follows (50, p. 320): (1) Possessing a marked musical sensibility, 12 per cent. (7 males, 5 females). (2) Those who, perhaps, felt music, and eventually evince a certain degree of musical memory, but localised arbitrarily, and almost never retained, 20 per cent. (11 males and 9 females). (3) Negative: (*a*) voluntarily negative, 14 per cent. (7 males, 7 females); (*b*) negative through incapacity or lack of attention, 30 per cent. (22 males, 8 females); (*c*) able to repeat the rhythm only, 9 per cent. (3 males, 6 females); (*d*) able to repeat some note beside the rhythm, 7 per cent. (7 males).

Of 8 mutes, the authors say that, contrary to the results of Ireland, all efforts to discern their sensibility to the sounds of the pianoforte were unsuccessful.

Newington explains the liking of 'idiots and others of low intellectual development' for music as 'a ready means of gratification of the pleasure sense which the idiot retains'—a sense-gratification, the essence of which lies in motion.[1]

Both with normal men and animals there appear to be considerable individual differences in the psychic and emotional effects of music. This is clearly shown by the experiments of Gilman and Downey.

Some curious information as to the effects of music upon men of science and *littérateurs* has been collected by Dory and Ehrenfreund. From their investigations we learn that even in Italy, the land of music *par excellence* in many respects, not a few men of science and of letters neither play any musical instrument nor are sensitive to anything beyond an admiration for music. Schiaparelli, the astronomer, and Mantegazza, the physiologist and anthropologist, seem to figure in this list. The latter 'adores music,' but cannot tell

[1] *Journ. Ment. Sci.*, 1897, p. 717.

a waltz from a polka, and prefers the human voice to all instruments. Mantegazza, however, says that music serves him as an inspiration to write and think. This last effect of music is quite common with non-musical people. Indeed, the well-known stimulating effect of music upon physical labour would suggest something similar in the mental field. The effect of music upon mental labour offers an opportunity for research of a thoroughgoing kind, for although Honnet and others, Bücher, Noiré, etc., have touched upon the topic, many points yet remain to be brought out.

Primitive Music.—The best work on *Primitive Music* is Wallaschek's exhaustive essay, in which the origin and development of the music, songs, instruments, dances and pantomimes of savage races are sympathetically treated. Music, like speech, seems to be the patrimony of all mankind: 'However far we might descend in the order of primitive people we should probably find no race which did not exhibit at least some trace of musical aptitude, and sufficient understanding to turn it to account. In fact, it would appear that among races of the very lowest order of civilisation there are frequently to be found some which have more musical capacity than many of a higher order. This is undoubtedly the case with the Bushmen' (674, p. 1).

In his discussion of the origin and development of musical instruments Wallaschek rejects the theory that the oldest instrument is the drum, while all stringed instruments are of the most recent origin. The oldest instrument, he thinks, is the flute (and the pipe), while the stringed bow, a very simple instrument, long preceded the drum. As even our modern phenomena show, the drum is an instrument needing co-operation for its production, but the boy does as the race has done, 'cuts his flute in a few moments,' or makes his primitive harp sometimes as readily. Utterly unjustifiable, Wallaschek thinks, is Rowbotham's theory of the drum, pipe and lyre stages of musical development, corresponding to the stone, bronze and iron ages. Drumming may have been 'the first attempt at the practice of music, or rather of time-keeping, but the drum was by no means the first instrument.' Many primitive tribes, possessed of songs and dances, use no real musical instruments at all, 'anything making a noise' being used to accompany the performers—just as our children are wont to do to-day. The appreciation of European instruments

of music in savage countries is often very different from what it is in civilised lands: the Australians were frightened by the Scotch bagpipe; in Tonga, French horns were particularly despised; the Fuegians were unimpressed by the flute. There is great variety also in the effect of European singing upon savage auditors: 'God Save the Queen' set an Australian to weeping; the 'Marseillaise' sent an Australian family into whimsical contortions and gestures of wild enthusiasm, causing them even to forget their meal.

Among many primitive peoples music is much more common and varied in psychical motive than is generally supposed. What Sir George Grey, as cited in Wallaschek (674, p. 164), says of the natives of Australia will hold of not a few other primitive peoples as well: 'To a sulky old native, his song is what a quid of tobacco is to a sailor; if he is angry he sings; if he is glad he sings; if hungry, he sings; if full, provided he is not so full as to be in a state of stupor, he sings more lustily than ever.' Primitive peoples 'are highly susceptible to music'—both as a stimulus to excitement and a means of solace and cure in illness. Wallaschek also informs us that 'in some cases music causes physical pain, and makes men sick and unfitted for work for days together.'

Music, Dance and Song.—Among other points brought out by Wallaschek are these: Dance and music go together ('are, in fact, one act of expression, not merely an occasional union, like poetry and music'). And 'women are the most persistent dancers, and, as they are the better singers as well, *primitive* music owes its support to a great extent to women.' Dances are imitations of the 'movements necessary in the struggle for existence,' or of the movements of animals. The musical dance-chorus is of a social character; of like origin is the orchestra, really a very primitive institution. In the primitive drama, pantomime, opera, the social (even national) expression of music reaches its highest point—*inter carmina silent arma.* Professional composers and singers are known from very early times and among the most primitive races, and their power in politics has at times been considerable. Primitive races know both the major and the minor key; harmony and part-singing; diatonic and pentatonic scales. The human voice has not been higher in early times, 'the high pitch being merely due to the great excitement with which savages sing.'

What Sir George Grey said of the Australian ought to be

read in connection with what Miss Alice C. Fletcher, in her excellent 'Study of Omaha Indian Music' (214), says of the American Indian: 'Among the Indians music envelops like an atmosphere every religious tribal and social ceremony, as well as every personal experience. There is not a phase of life that does not find expression in song. Religious rituals are embodied in it; the reverend recognition of the creation of the corn, of the food-giving animals, of the powers of the air, of the fructifying sun, is passed from one generation to another in melodious measures; song nerves the warrior to deeds of heroism and robs death of its terrors; it speeds the spirit to the land of the hereafter, and solaces those who live to mourn; children compose ditties for their games, and young men by music give zest to their sports; the lover sings his way to the maiden's heart, and the old man tunefully invokes those agencies which can avert death. Music is also the medium through which man holds communion with his soul, and with the unseen powers which control his destiny.'

This statement is confirmed by Dr Franz Boas[1] who disposes of 'the often-repeated statement that the Indian has no sense for music, and that particularly as compared to the negro, he is entirely lacking in musical genius,' though it is true his efforts have been devoted more to the production of songs than to the invention of musical instruments.

Miss Fletcher's estimate of the *rôle* of music among the Omaha Indians seems to emphasise what Wallaschek says about its importance among primitive peoples: 'Primitive music is not at all an abstract art, but (taken in connection with dance and pantomime) is a part of the necessaries of life (war and hunting), for which it seems to prepare or to maintain our strength and skill during time of peace' (674, p. 294).

In many respects, music may be said to be just as important in childhood.

Children and Music.—A very interesting essay by Miss Fanny B. Gates contains the results of an examination of the answer-papers of some 2000 school-children of New England (100 boys and 100 girls of each age, from seven to sixteen inclusive) as to their musical interests, favourite songs, etc. The author finds that the elements of greatest importance in the musical development of the child are, 'rhythm, love of

[1] *Journ. Amer. Folk-Lore*, VII. 170.

home, love of country, melody, religious sentiment. The same qualities appear in the musical development of savage tribes' (238, p. 19). Miss Gates cites with approval the words of Jean Paul: 'Music, the only fine art in which man and all classes of animals, spiders, mice, elephants, fish, amphibious creatures, birds, have a community of goods, must ceaselessly affect the child who is the spiritual and the brute beast united,' and thinks that in the growth of music we see the child repeat the history of the race.

This author seems to agree with Dr Reissmann and other German authorities, and President Hall, that mood, season, and other factors in the make-up of the child should be taken into consideration, as they have been evidently in the history of the race. Primitive peoples do not willingly sing love-songs out of place, spring-songs in the fall, war-songs in times of profound peace, or satires at their most solemn meetings. Nor should children thus digress from the right way.

All investigations of the phenomena of music and song among children seem to indicate that folk-songs and the cultivation of music by ear come first, not the artificialities and notations of the school. Song should be free and fitted to the child mind.

Primitive Æsthetics.—The universality of a very primitive sort of æsthetics is thus described by Mr J. D. McGuire, who sees in the child the type of it all (388, p. 671): 'The writer imagines that the same feeling which impels a small child to pick up a smooth pebble on the beach has something to do with the fondness of adults, either savage or civilised, for similar things. To the savage a bear's claw, an elk's tooth, or the talons of an eagle, are evidences of skill expended or bravery shown. The civilised man may preserve the shell, as he certainly does the pearl or the gold nugget set to adorn his person. The differences in society establish the values of jewellery, and the scarcity of an object makes it as attractive to the one race as to the other. Throughout all periods and conditions man appears to have entertained a lively appreciation of the colours of the rainbow, the gay plumage of a beautiful bird, the grace of the cat tribe, the viciousness of the wolves, and the beautiful lines in nature. There is in the human being an instinctive appreciation of beauty and fitness which is not shared by any of the animals. Fashions change continually, and there are many instances of an article' [the

ancient bronze fibula and the modern safety pin, for example], 'common at one period, but subsequently quite forgotten because of its disuse, which after a lapse of ages has again appeared, possibly as the result of an independent discovery.' So far the anthropologist. Somewhat similar are the views of many modern psychologists. Professor H. R. Marshall (408, p. 101), who holds that the 'art impulse' is a 'blind impulse leading men to *create* with little or no notion of the end they have in view,' thinks that this impulse, so wonderful in some of its genial developments, 'is, in one form or another, a common heritage for all members of our race.' As Professor Marshall further says: 'What child, what savage does not show some tendency to use his surplus vigour in crude attempts to produce works, which, in their developed form, give us our best art products? Almost every adult feels some tendency to write verses or to compose melodies, or to dabble with the brush and palette, or to represent his thoughts with the draughtsman's pencil.'

The spontaneity of art is greater than age, or sex or race, but its expression is diversely controlled by these and other factors of human individual and social development much more than its origin.

To some of the most primitive races of men, the rude beginnings of the education we seek to convey at the present time by means of picture galleries, art museums, photographic and stereopticon exhibitions, came through their implements and weapons, which were often travelling museums and libraries as well.

Of the ornamentation upon the drill-bows, a characteristic instrument of the Eskimo, Mr J. D. McGuire writes (388, p. 720): 'The ornamentation upon the ivory drill-bows is extremely varied in its range, from mere scratches or notches made in the ivory to ornamented carving and etching. These designs, etchings and carvings appear to constitute quite an elaborate aboriginal school of art. At one place we encounter bows covered with lines, circles, angles or curves, drawn with precision and elaborated carefully. In another place we see animal life portrayed with remarkable fidelity to nature; hunting and trapping scenes are delineated with minute precision, and caricatures of daily life are often portrayed with no mean artistic ability. These drawings often show a keen appreciation of the ludicrous.

'These drill-bows have on them pictures of youth and old age; and from the frequent occurrence of dances and games etched into the ivory, we can see at a glance that these hyperboreans enjoyed at times pleasures with which their lives are not generally supposed to be associated. On these bows are seen whales floating, diving and spouting, as well as the dead animal being dragged to the ice. Seal and walrus hunting scenes are well shown. Porpoise in schools; ducks flying in bunches; deer feeding and running; the setting of traps, and the animals caught in them, are often seen, and no drawings appear more common than do those representing the dragging to shore, or to the ice, of captured game.'

Indeed, it would be possible, from a study of drill-bow etchings, 'to understand the daily life of these people.' Here is a widespread source of education in art and the science of life, and we know, moreover, that with many peoples, miniatures of these implements and instruments were made to serve as toys and playthings for their children.

Ornamentation. — 'The mania for ornamentation,' says Mongeolle, 'is as old as humanity'; prehistoric man, as far back as we can trace him, knew somewhat of the art. The origin of ornament is to be sought in 'social inequality,' and the 'democratic equality,' to which the world is tending, has been accompanied by a decrease in the 'orgie of ornament,' which has been parallel with the rise in culture and civilisation. In savage and barbarous races men and women have vied with one another in mutilating nose, lips, teeth, genitals, and other organs of the body, until these have come to resemble more the rudimentary and vestigial ancestors, or shrunken-up remains of the parts in question, rather than their full-functioning evolutionary equivalents. They have assumed the skin, the claws, the teeth, the face-mask of the fierce creatures they have slain, or the gentler ones they have tamed. And when man came to be the great enemy of man, and the struggle was between men and men, the star of the warrior rose as that of the woman fell. Tattooing, painting, scarifications, etc., simulated the enemy dead and gone, his blood, the wounds of battle. As man has formerly clothed himself in the wild beast he had slain, so in some fashion he did now with the man he had killed—the teeth, bone, fingers, skin of the fallen foe served him for ornament, as had done before the bones, teeth, claws of animals. When the metallic arts began to develop, imita-

tions took the place of the older ornaments, and decoration became more and more symbolic; the early appearance and development of the seal-ring is a most interesting case in point. Woman is more given to ornament and decoration to-day than man, and the reason is that she has not yet emerged from age-long servitude. Her abandonment of heavy earrings, anklets, rings, belts and girdles, ear-piercing, foot-cramping, waist-compressing, has progressed with her increased freedom and liberty of action. Man, also, with the rise of social equality, has lost his heavy clothing, his ungainly head-dress, his clumsy boots; the soldier is no longer the museum of his wars, the nobleman no more the *résumé* of his tyranny, the priest no longer the epitome of his theology—after six o'clock they are all equalised in the conventional 'dress suit.' It is a social rather than an æsthetic factor which has been most powerful in influencing to this end, says M. Mongeolle, and the law of the diminution of ornament meets us everywhere in the world where man has made progress at all. A most interesting parallel is made by the author between man's abandonment of profuse decoration and his treatment of the products of his artistic genius: 'The idols left us by the least civilised peoples of antiquity are speckled from top to bottom, covered with the loudest colours, profusely laden with crowns, necklaces, bits of all sorts. In proportion as art progresses, the tone of the paintings softens, the polychroming is effaced, and the material chosen by preference, white marble, is precisely that which takes on the most uniform tint—lastly, all the ornaments disappear. The Venus of Milo, the Venus Aphrodite, Diana hunting, and all the fine statues which adorn museums of antiquities, have on them no bracelets, rings, or jewels of any sort. The artist, in advance of his century, foreseeing, but without knowing its cause, this evolution of ornament, had divined the fact that the most beautiful ornament of woman is her own beauty' (432, p. 97). As Mr Bates points out, one very great factor in emancipating man from the hard-and-fast rule of the survival of the fittest was the development of the culinary art, since it 'reconciled the otherwise impossible co-existence of great assimilation with moderate assimilative organs and a free and active brain.' This early æsthetics of the stomach, if such it may be called, left the way open, among very primitive peoples, for the appearance of an æsthetics of the mind, and, a little later, a large development of the useful arts: 'I mention the æsthetic arts

first,' says Mr Bates again, 'for in all, except the arts of veriest necessity, they uniformly precede the industrial arts in the order of development. The coloured boy who "could do without shoes well enough, but was suffering for a breast-pin," was a rude but true type of the evolution of his race' (41, p. 143).

That many primitive peoples have a decided sense for the beauty and perfume of flowers, plants, and leaves is certain, and their poetry often abounds in picturesque and graceful metaphors and figures drawn from observation of plant life and development. The use of flowers and leaves for personal adornment is also common with several of the lower races, those of the Pacific Islands especially.

Dr Guppy writes of the natives of the Solomon Islands, a people credited often with great cruelty and cannibalistic practices (258, p. 134): 'The men of the Solomon Islands are very fond of placing in their hair a brightly-coloured flower, such as that of *Hibiscus tiliaceus*, or a pretty sprig or the frond of a fern. My native companions in my excursions rarely passed a pretty flower without plucking it and placing it in their bushy hair; and they were fond of decorating my helmet in a similar fashion. Sometimes one individual would adorn himself to such an extent with flowers, ferns and scented leaves, that a botanist might have made an instructive capture in seizing his person. In addition to the flowers placed in his bushy mass of blackish-brown hair, he would tuck under his necklace and armlets sprigs and leaflets of numerous scented plants, such as *Evodia hortensis* and *Ocymum sanctum*. He would take much pleasure in pointing out to me the plants whose scented leaves are employed in the native perfumery, most of which are of the labiate order, and are to be commonly found in the waste ground of the plantations. The women seldom decorate themselves in this manner. Those of Bougainville Straits make their scanty aprons of the leaves of a scitamineous plant named "bassa," which, when crushed in the fingers, have a pleasant scent.'

Several of the American Indian tribes have shown themselves very fond of flowers. Tusayan maidens, according to Dr J. W. Fewkes, deck their hair, on holiday occasions, with *Castilleia affinis* and the flowers of *Œnothera pinnatifida*, while a legend of the same people runs: 'Soon after people came up from the underworld, and were yet wandering in search of

permanent dwellings, some women daily plucked the flowers of this plant [*Sisymbrium canescens*], fluttering their yellow blossoms in the faces of the infants cradled on their backs to still their cries.'

Mr Walter Hough informs us further as to the use of the flowers of *Pentestemon ambiguus*, *Verbesina enseloides*, and *Castilleia linariaefolia*. The flower of the *Verbesina* is 'worn by children in the hair on the forehead,' and concerning the *Castilleia* we learn: 'The flowers are worn for adornment by the girls. The name [wupá mansi] means "the great girl flower." It is one of the very few attractive and beautiful flowers of this region, and may appropriately be called the Hopi national flower.' The *Abronia fragrans* is 'placed on a child's head to induce sleep' (*Amer. Anthr.*, 1896, p. 43).

The Kootenay Indians of South-eastern British Columbia call the *Arenaria pungens* (sand-wort), *K'sŏk'nókayōk*, 'beautiful flower,' admiring its flowers very much. For their scent they esteem highly several plants,—*Oryzopsis asperifoliens*, *Matricaria discoidea*, *Artemisia discolor*, etc., and the writer has seen Indians 'applying the latter to their nostrils, or, where it is found in great abundance, rolling about on the ground in evident delight.' They sniffed at the flowers in great delight, as children and women often do, or as maidens do at the bunch of violets given them by their sweethearts.

Æsthetic Emotion in Children.—Perez's opinion that children 'are very little susceptible of real æsthetic emotion,' is cited with approval by Miss Lombroso, who remarks (369, p. 163): 'Certain spectacles in nature, certain works of art, strike them, but not deeply, and, indeed, only for those things, which attach themselves to their immediate experience. In the collection of Buisson, *e.g.*, containing more than 200 descriptive and imaginative themes of children from six to twelve years of age, one meets but few phrases that betray a sense of the picturesque, a certain sensibility for beautiful things.' As compared with American school-children, Italian and French children seem to have a higher sense of the picturesque, though all of them too often exhibit a geometric, commercial, anatomical, inventory sort of style and treatment, all full of arid, loose imagination, waked up here and there by an occasional striking word or genial turn of speech; or, as sometimes happens, since naming a thing is, for the child, to see it, to possess it, he 'makes a rapid inventory of all sorts of things,

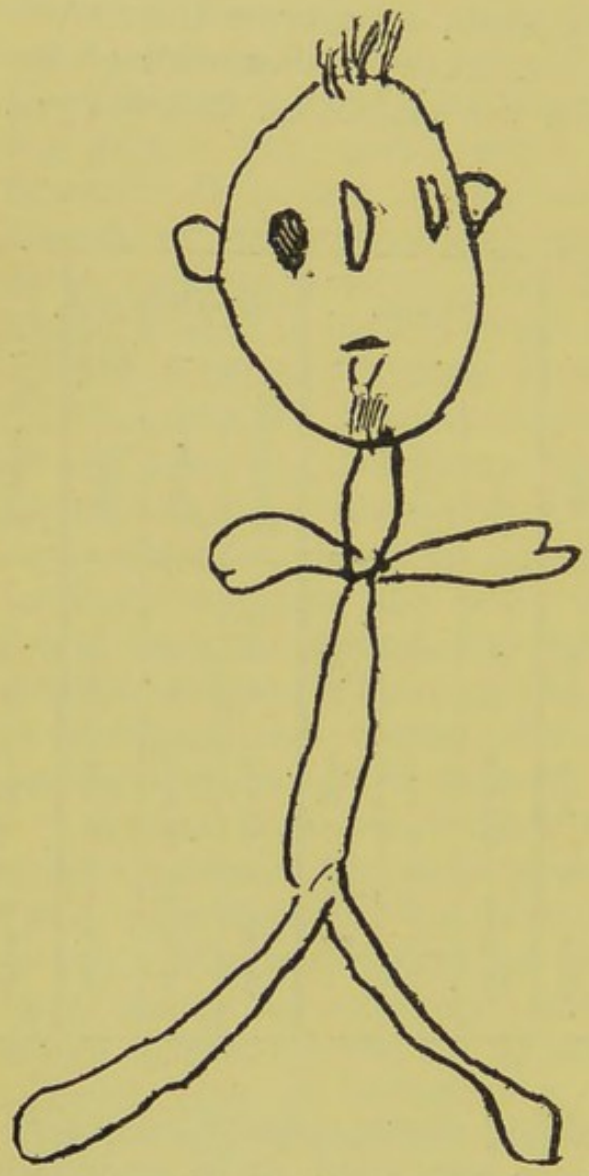
just as in his play (the pleasure is analogous) he makes of a little heap of sand, castles, fortresses, etc.' (p. 153).

The judgment of the young as to the impression produced by the human face has been made the subject of experimental investigation by Professor Paolo Mantegazza, who exhibited to his class at the Institute in Florence 'a good photograph' of a man or a woman, requesting them to express their views as to the æsthetic, moral and intellectual appearance of the physiognomy. The chief results are embodied below (399, p. 262):—

Impression.	Æsthetic.			Moral.			Intellectual.			
Nationality.	Beautiful.	Mediocre.	Ugly.	Good.	Mediocre.	Bad.	Intelligent.	Mediocre.	Stupid.	Number of Pupils.
Akka (Miàni, Africa), 'pygmy' . . .	6	2	5	5	3	5	8	2	1	...
Australian . . .	2	1	9	5	...	7	2	1	9	...
Bali (Sunda Islands) little girl	...	8	3	8	2	1	3	5	3	11
Coromandel (India) man .	4	3	3	3	1	6	5	4	1	10
Japanese little girl . .	7	2	...	8	1	...	3	5	1	9
Negro (Zanzibar) . .	...	...	9	...	1	8	2	..	7	9
Roman, pretty young girl	9	1	...	7	2	1	7	2	1	10
Roman peasant . .	4	5	3	1	1	10	8	2	2	12
Siamese woman . .	2	11	2	10	4	1	5	7	3	15

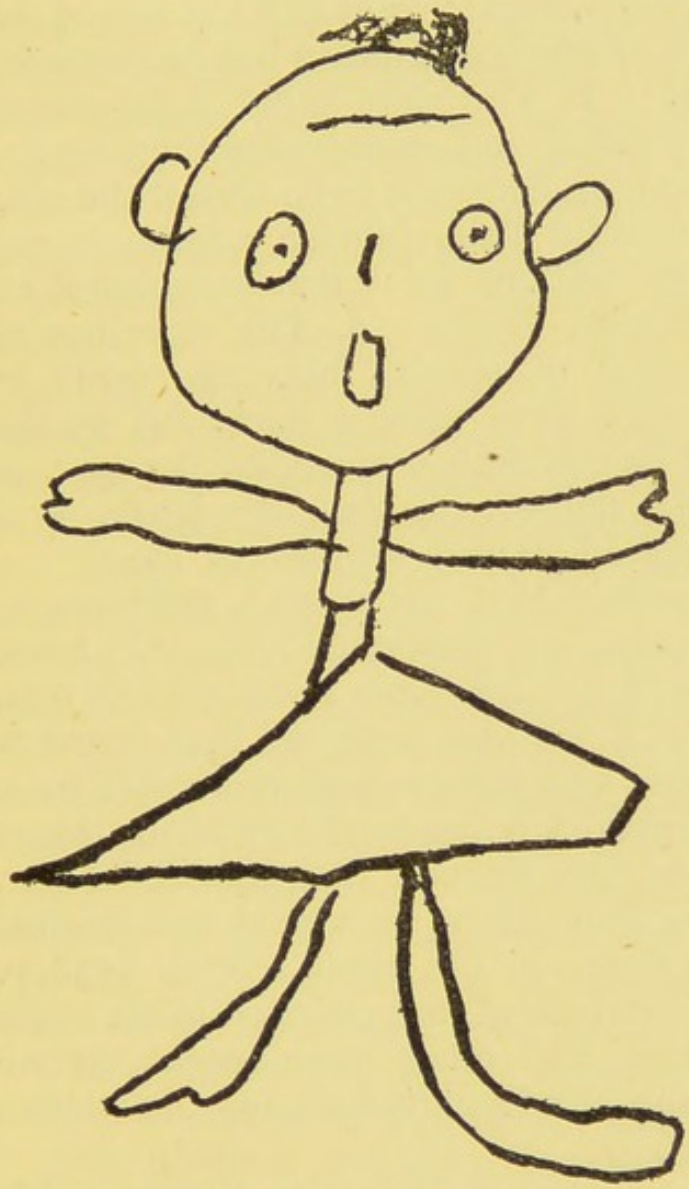
It will be seen that 'in judging strong expressions everyone agrees, while divergencies are very great when uncertain expressions are in question.' Mantegazza points out that face-study is one of the earliest arts, indeed *the* earliest art of childhood; it may be said that the face of its elders is the child's chart and compass in the first voyages of life. No wonder, then, that children's judgments of strange physiognomies, like those made by women, are so strangely confident and so often just. With children, as in savage art, the eye often is all, and for them the 'evil eye' is more of a fact than in the prejudiced mind of the adult parent or nurse.

Children's Drawings.—One of the earliest notices of children's drawings is to be met with in Boccaccio. In the *Decameron*, Novel VI., Day VI., Scalza seeks to prove that the Baronici are the oldest family in the world, being the ugliest, by the following argument: 'You must understand, therefore, that they were formed when Nature was in her infancy, and before she was perfect at her work; among them you will see one with a long, narrow face, another with a prodigious broad one; one that is flat-nosed, another with a nose half an ell long; this has a long hooked chin, that one eye bigger and set lower down than the other. In a word, their faces resemble, for all the world, what children make when they first learn to draw.' It is quite appropriate, therefore, that an Italian, Corrado Ricci, should give us, in his study of the art of little children, one of the first and best studies of the art products of the child-mind. Ricci's investigation, suggested by a chance observation of the verse and drawings (sometimes obscene and naturalistic) which young hands had inscribed upon the walls of a portico in Bologna, deals with some 1250 drawings, paintings, carvings, etc., of boys and girls of the elementary schools belonging to all conditions of life. Some 100 drawings were obtained (in the course of five months) from the little daughter of one of his friends, about 250 came from the schools of Modena, the examples of plastic art were the result of the labours of some twenty children.



DRAWING OF MAN BY SIX-YEAR-OLD CHILD.

Development of Child-Art.—The chief points with regard to the art of little children which Ricci notes are: 1. They begin with man, the human form (head and legs, the rest has yet to come, and comes gradually, often not till the seventh or eighth year). 2. The peculiarities, errors and idiosyncrasies of the drawings of little children are due to the fact that they are describing the man and not striving to reproduce him artistically—that 'they are making with signs the very description they would make with words.' They know, *e.g.*, that a man is always a biped, and they show his two legs, whether he is walking, standing, on horseback or in a boat. Even when he is hidden in part he is still the man as they see, know, speak of him, his two legs, arms, eyes, ears belong to him everywhere, and in profile-drawings, which come after full-face pictures, he preserves quite often his two eyes, or acquires an extra nose at one side of the face resulting from confusion of the profile and the full-face drawings. 3. In the child's first attempts at plastic arts the defects noticeable are—and here the art of the child gets close to that of savages—defects of technique; the hand unskilled to draw is even more unskilled to model. The drawings of primitive peoples are often much superior to those of children, but their modellings and sculptures are



DRAWING OF WOMAN BY SIX-YEAR-OLD CHILD.

often no better at all. With the art of the great mediæval decadence the points of contact are fewer, for the latter is rather defective than infantile, and the execution of the worst products of that age is generally better than that of the art of children and of savages. One thing, however, characterises them all in common, lack of proportion—birds as big as oxen on trees; men larger than the houses; horses half the size of the men upon them, etc. The children also have a less pronounced sense of perpendicularity. 4. The child mind soon comes to be more impressed by detail and minuteness than by the sublime—the pipe and the plug hat come to be almost the idea of the man. 5. The beautiful that children admire is not modified by so many considerations as is that worshipped by adults—it is simple, primitive, virgin. 6. The drawings of children show the influence of special facts or events in marked fashion. If children have seen a horse fall in the street, and are asked that day to draw a horse, 80 per cent. of them will draw the animal falling; the drawings made on a snowy day are apt to be dotted all over with marks, etc.

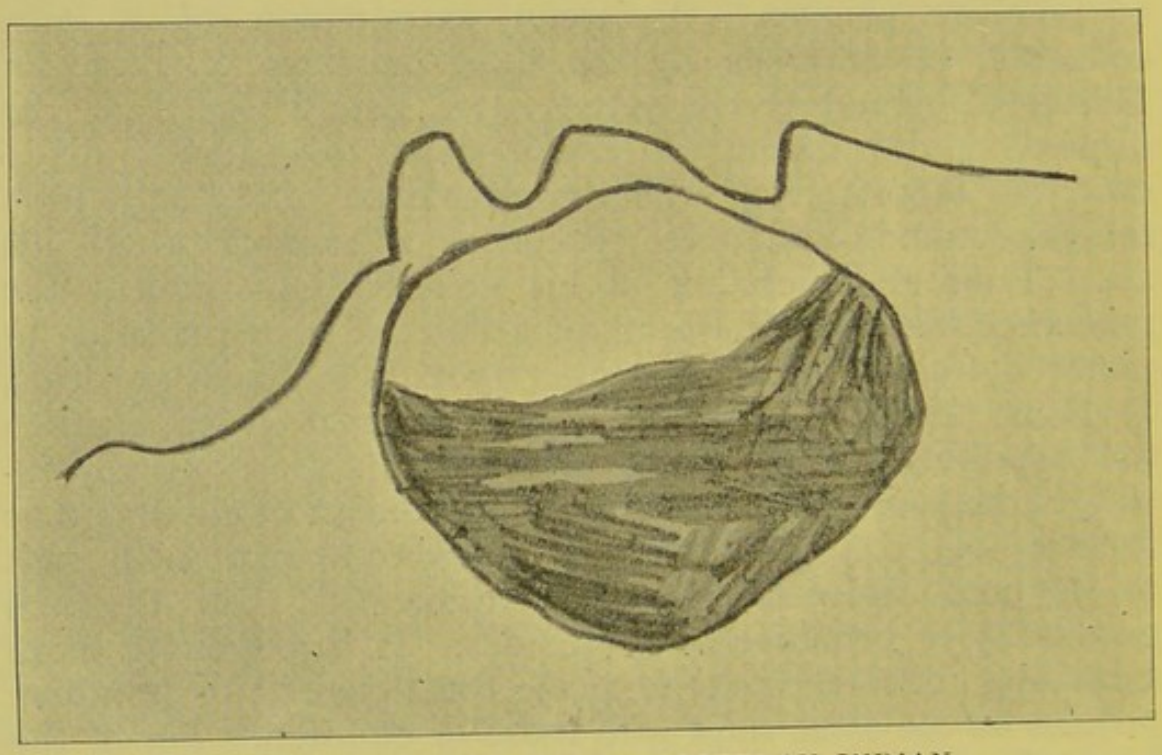
Ricci's general conclusion is that 'art as art is unknown to children,' and memory plays an important *rôle:* 'I have, in fact, proved in the case of children from many schools that, with one or two exceptions, those who made the best drawings were the best scholars, those who observe and remember most accurately, and are able to make a better inventory of the things learned by them when they have learned their lesson. Later, on the other hand, he may turn out to be a good and original artist who cut the poorest figure in the whole school' (538, p. 79). Sully repeats Ricci's statement that children in art begin where God left off, with man, and other more recent investigators have emphasised the child's early love for the human form as a subject of his art.

Children's Drawings and those of Primitive Peoples.—Professor Elmer E. Brown, summing up the results of the study of the drawings of four Californian children, concerning which interesting details are given, concludes: 1. The first drawing was rather pictorial than decorative in character, the development of symmetric forms merely for the sake of beauty being of late occurrence and due to the influence of older persons. 2. The child's first chief interest is rather in the act of drawing than the product. 3. The drawing is only in a very limited degree the embodiment of the child's concept of the thing

represented, since he lacks both the power of muscular co-ordination and the mastery of technique which such interpretation presupposes. 4. The seemingly symbolic is hardly more than a mere simplifying of figures to avoid the difficulty of naturalistic representation. 5. There is comparatively little marked conventionalisation. 6. The alternation between detail and general outline is noticeable. 7. There is little evidence of strong preference for colour. In the case of all these children (the oldest was but five at the time the last record was taken), Professor Brown remarks the distinct influence of their civilised environment, a factor which certainly causes their art-products to be unlike in some respects those of primitive peoples. A careful examination of a large collection of drawings by the little daughter of Professor Myron T. Scudder, which the latter kindly placed at the disposal of the present writer, emphasises this cause of difference, the importance of which appears even more clearly from the inspection of undoubted specimens of American aboriginal art. From the imitation of his civilised environment the modern child evolves art-products that are sometimes as far removed from those of the lower races as are ideas or ideals. Dr Ernst Grosse, who has discussed with great critical acumen the beginnings of art, writes of the comparisons usually instituted between the art of savages and the art of childhood as follows (254, p. 185): 'It is just in this combination of truth to life and rudeness in representation that the essential peculiarity of primitive sculpture lies. It is, therefore, more surprising than pertinent to place the drawings of primitive peoples on the same stage with those of children. For of the keen observation gift, which appears unmistakably in all the drawings of hunter-races, with the best intentions in the world one can discover no trace in the unaided scribblings of children. The works of art with which our children decorate table and walls are far rather symbolical than naturalistic. The only real resemblance between the art of children and the art of primitive peoples lies in the fact that the latter know almost as little of perspective as the former. Like the drawings of children, the drawings of primitive peoples are often taken for caricatures, and in the one case this idea is as inexact as in the other. If a child or an Australian in a drawing disproportionately sets off any part of the body or the dress, it signifies—provided, of course, that is done intentionally and

not out of mere awkwardness—simply that that particular part, for some reason or other, has seemed specially noteworthy to the artist. Children and savages really have a strong *penchant* for satire, and it may therefore safely be assumed that caricatures will be found among the products of primitive art. But it is not easy to detect them, and consequently it is well to declare caricatures only those primitive drawings whose satirical intention is expressly attested.'

Observation.—A careful study of some 300 drawings of the Kootenay Indians of British Columbia, obtained by the present writer during the summer of 1891, corroborates the

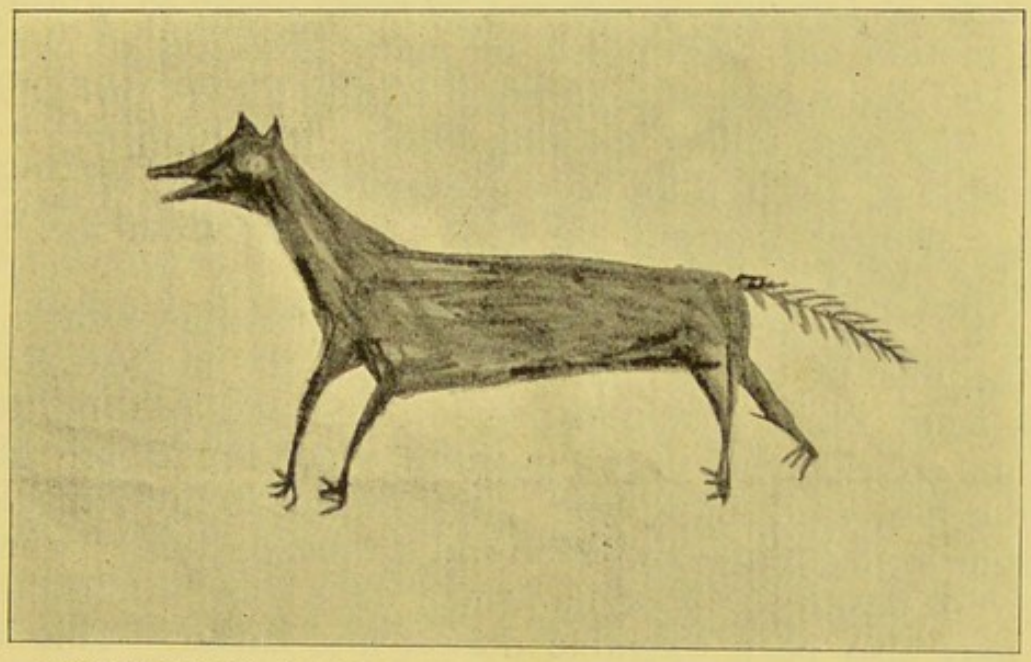


DRAWING OF SUNSET BY KOOTENAY INDIAN.

view of Dr Grosse as to the influence of their strong observation-gift upon the drawings of primitive peoples. Life and action, unmistakably represented and consciously recognised, are there. Characteristic attitudes are reproduced, environment often suggested, and a fidelity to nature constantly recurs of which children so often know little or nothing. The figures in primitive art live, move, and have their being. Froebel said very justly (225, p. 171): 'Give the child a bit of chalk or the like, and soon a new creation will stand before him and you,' but the new world thus called into existence will differ in some marked respects from the world of savage

art. It is very doubtful if any of the truly primitive races of men are quite as clumsy in their art-expression as many children, or produce so often such 'wooden' effects.

As interesting examples of the art-development of different peoples we may take the paintings of the Mojos Indians of Bolivia, and the sculpture of the ancient Peruvians. Of the former Herndon[1] says: 'The Mojos Indians have a natural fondness for painting the human figures and representing birds and animals, particularly the common chicken and the cow' [both introduced by the whites]. 'The latter seems to have made a deep impression upon them at first sight; they



DRAWING OF COYOTE OR PRAIRIE WOLF BY KOOTENAY INDIAN.

often paint the cow fighting or chasing a man. These Indians describe the novel sights. I have not seen a single painting of an Indian or an animal which originally belonged on this pampa. The white man, the cow and the chicken cock are their favourite studies. On the white walls of their houses, inside and out, such figures appear as a decoration. In the rooms of the government houses the best artist displayed his talent, and those drawings on the walls of the market-place are admired by all who go there. So much taste and caution have the boys and little children, that none of them are known to disfigure any of these paintings in the public market-place. The

[1] *Valley of Amazon*, Vol. II., 1854, p. 237.

whole country is a dead level; the view only extends to the horizon, the sky above, and one continued sheet of herd-grass below. The Mojos Indian makes a scene for himself, and describes it with coloured paints. On a windy day he strikes light and puts fire to the dry prairie-grass. As the wind carries the fire swiftly along, and the sheets of blaze shoot up, the Indian sketches the effect produced upon the cattle, who toss their tails into the air and rush in fear, with heads erect, at the top of their speed in an opposite direction to that from which the wind comes. He decorates the inside wall of his house with this scene, which is a common one on these prairie lands.'

Love of Life and Motion.—This eager desire to portray life and motion has been noted by many observers of children, and Dr Lukens cites with approval Hirth's lament that children are never seen taking drawing lessons in menageries. The restraints of civilised life have prevented this very thing which savage peoples can and do do — sketching from the living, moving object.

Dr Grosse seeks to explain the remarkable artistic skill of the men of the river-drift in France, the modern Eskimo and many other primitive peoples, past and present, as the natural development of two qualities, which in the early history of the race must have been indispensable in the struggle for existence—a gift of observation and manual dexterity; wherever everyone has to be a good huntsman and a good handicraftsman, he may also be a tolerable drawer and carver. This is the 'solution of the riddle of the reindeer period.' Everywhere, continues Dr Grosse, we see the contrast between hunter-folk and agricultural and pastoral peoples revealing itself in the rarity among the latter of the talent for life-like and nature-true drawing and carving, and cites particularly the statement of Fritsch as to the difference between the 'living sketches of the Bushmen and the stiff, grotesque animal forms which the Bantu models and carves with such trouble' (254, p. 390). If agricultural and pastoral peoples excel hunter-folk in culture, they stand far below them in the plastic arts, another proof of the lack of correlation between art and civilisation. The great men of a shepherd-folk are poets rather than draughtsmen, and the older, wordless art is often truer to nature and to life.

Grosse's view as to the partnership of a keen observation-gift

and great manual dexterity in the production of the wonderfully accurate and skilful drawings and carvings of primitive man receives support from the examination by Miss Louisa McDermott of the drawing-papers of 720 Indian children (besides those of 60 adults) in the reservation-schools of the United States, from which it appears that: 'The Indian child has more native talent for drawing than the white child; he has an earlier development as well. This is shown by the better control of the finger movements.' Similarly Miss Marguerite Gallagher notes among the differences observed between 300 papers 'the spontaneous drawings of the children of the Indian school at Pipestone Agency,' and those of white children of like age: 'Their drawings contain more life and action. More stories are told in pictures than in the same number of other drawings' (385, pp. 132, 134).

'*Skeuomorphism.*'—In the history of primitive art the fact repeatedly comes out that in the fabrication of new things the inventor's chief aim was to preserve, or to embellish, the old. Hence many of the new art-products are simply copies, in other material, of the old, the structure of the latter determining the form and the ornamentation of the new manufacture. Such transformations and transferences Dr H. Colley March has styled 'skeuomorphs' (from the Greek word σκεύος, 'implement,' μορφή, 'figure, form'), and much interesting information concerning their origin and development may be found in Professor Haddon's *Evolution in Art* (263, p. 75), F. H. Cushing's study of 'Pueblo Pottery as illustrative of Zuñi Culture-growth,' and the numerous essays of Professor W. H. Holmes, especially his *Origin and Development of Form and Ornament in Ceramic Art.* Holmes goes so far as to say: 'In the first stages of art, when a savage makes a weapon, he modifies or copies a weapon, when he makes a vessel he modifies or copies a vessel.'

We are thus enabled to account for the great antiquity of certain artistic forms and fashions of ornament. Pottery goes back to clay-lined wicker, grass, or bark vessels and gourds; the ornamentation of the bronze celt repeats the lashing and binding of the old stone axe; the rock-tombs of Lycia are 'models in stone of wooden dwellings'; the gable of the latter has become 'the crowning glory of Grecian temples,' the tree corner-post, the beautiful column with its wonderful capital (263, p. 114). A glance at any modern building or into any

furnished apartment will reveal scores of these ancient skeuomorphs, whose existence seems evidence of the essentially conservative and misoneistic nature of man, particularly in the early stages of artistic development.

The art of childhood, too, is largely skeuomorphic, in the school, at least. Dr H. T. Lukens remarks very appositely: 'In many of the kindergarten drawings that have been sent in I have been struck with the angular style of the features, as if the children had carried over to their free-hand drawing the wooden effects of stick-laying, drawing on square-ruled paper, and constructing trees and umbrellas out of squares and triangles.' Without a model to skeuomorphise their natural bent, however, children are, perhaps, scribble-minded and naïvely artistic in the highest sense, as many of their unaided productions show in their chief elements. Dr Lukens's complaint that 'some drawing-teachers think it the acme of pedagogic skill to make use of geometric shapes,' and take 'all life and action' out of children's pictures by making the lines straight, belongs with Professor A. Grünwedel's protest against 'the attempted "correct" reproduction of aboriginal ornament according to the European so-called feeling for beauty, whereby somewhat crooked lines are replaced by straight ones, and unequal halves, which are deemed corresponding, are made alike' (263, p. 335). Professor Grünwedel observes further: 'The Oranghutan' [tribe of the Malay peninsula] 'draws a curve and sees it as a straight line, he makes too many legs, too few fingers, but has, in spite of these faults, according to our conceptions, the power of seizing abbreviations of parts of the body in a picturesque manner, of skilfully interpreting contours, and of preparing intelligent ground-plans. The diagrammatic copying of primitive ornamental forms can therefore have no scientific value.' The curved lines of the savage and the child belong together, are, in fact, the primitive line of beauty.

The preponderance of animal-pictures in the art-work of primitive man is remarkable. Says Professor Wilson: 'There have been found in Western Europe about 400 specimens of this engraved and sculptured work belonging to the Palæolithic period. Of these, four-fifths are representations of animals' (687, p. 412). In this period indeed, 'nearly every animal belonging to that epoch, from man down, has been graphically represented.' In the following Neolithic period, however, 'there are innumerable specimens of decorative art as applied

to industry, while we are wholly without graphic delineations of the animals of the period, and no attempt appears to have been made to represent any living thing, or to make a representation of nature in any of its forms' (421). The school with us to-day seems to endeavour to hurry the child into a 'neolithic period' which has not the naturalness or the spontaneity of that of the race.

Cult of Line and Angle.—E. Cooke, criticising the drawing-instruction in the schools of London, cites with approval the dictum of Ruskin: 'A great draughtsman can, so far as I have observed, draw every line but a straight one,' and laments the devotion to lines and angles and geometrical - ornamental models shown in the schools, calling for the introduction of living objects, human beings, animals, plants, flowing water, blazing fire, etc., and other beautiful or interesting live things of nature. When the child longs to turn out men, dogs, cats, horses, houses, boats, etc., he is shorn of his freedom and bidden to draw a straight line, a cube or the like. When nature intends him as yet to be a player, an artist only, the school seeks to make of him a geometrician; when he desires to make many lines he is confined to one, when he endeavours to produce a whole it seeks to make him produce parts only. Neither the child nor primitive man begins with a geometric line—it is in a scribble that the history of graphic art lies hid.'

Some very interesting facts are contained in a paper by H. G. Fitz, who holds—and his statements rest upon '21,600 measurements of 2700 individuals'—that 'the average school-training has carried those who have followed it no nearer success in drawing than those who have not been so trained. Too often the child has been taught technical tricks instead of observing facts—he has had too many facilities and too few facts. Very many child-drawings are simply 'line-making without conscious effort,' and never get beyond caricature. The accurate seeing of the child's eye is under-estimated, 'voluntary attention, the foundation of the power of observation,' is neglected, too much precious time is wasted in 'technical finish,' and it is forgotten that the 'drawing' itself is of no consequence except as it stands for the record (209).

Resemblance of Art of Children and Savages.—How narrow the lines sometimes are which divide the art-products of the savage from those of the child and again from those of the ignorant peasant is shown by the fact that the Abbé

Domenech's *American Indian Pictographical Manuscript* (168), published in 1860 as an example of Indian pictography, was shown by Julius Petzholdt, the eminent orientalist, to consist only of 'scribblings and incoherent illustrations of a local German dialect.' Dr A. S. Gatschet, describing the Vatican MS. No. 3773, a pictorial MS. of the ancient Aztecs of Mexico, says[1]: 'One who had not previously seen a Mexican manuscript would, when first inspecting this volume, naturally believe it to be a picture book for small children. The gaudy colours, the strange acts in which the persons figured are engaged, their curious accoutrements bedecked with ornaments, the grotesque and impossible animals assembled on almost every page, sometimes serving as sacrificial victims, afford a sight "fearful and wonderful to behold." A closer comparative study, however, soon reveals the fact that the drawings are of a symbolic nature, and that every picture has a meaning disclosable by profound study of the Nahua people, their customs and artistic development.'

No. 83 of the Worcester child-observations on 'Imitation' (291, p. 13) reads: 'Jack, age two years. Jack spit on his fingers, and rubbed the wall of the house. He continued doing so for three or four minutes. I said, "What is Jack doing?" He answered, "Jack painting house."'

This recalls the fact that the primitive form of painting was the rubbing into the skin of certain parts of the body the simple colour-substances of early times. 'To paint' and 'to rub' are synonymous in several languages of the lower races of men, *e.g.*, Klamath: *taláka*, to paint, to varnish, means to rub with palm.

Art and Magic.—While perhaps the great majority of the carvings of the primitive cave-men of France 'do not exceed in point of execution the schoolboy's sculptures on the wall,' the images of the reindeer, M. Popoff points out, are of a higher order of excellence, the characteristic lines of the animal being traced with remarkable care. Besides these, the figures of men so far found 'are puerile, almost caricatures, and utterly out of proportion.' These early savages, as Broca remarked, drew, for some reason or other, the figures of their fellows very badly. The total absence of designs from the plant world is noteworthy also. From consideration of these facts, Popoff puts forward the theory that these primitive

[1] *Amer. Anthr.*, Jan. 1897.

artistic products 'were not intended for ornamentation merely, nor yet as imitation pure and simple of nature, but as an instrument for struggling against nature.' In other words, when the cave-dweller of the Dordogne engraved on the handle of his poignard the image of a reindeer—the most important of the animal world to him—it was not by way of ornamenting his weapon, but because he thought by this means 'to exercise some magic power over his prey,' a view not so very far from that which long survived in witchcraft. The closer the resemblance of his carving or drawing to the actual form of the animal, the greater was his chance of acting upon him, and we have thus a very early and powerful reason for rapid improvement in art of the kind in question. Like his nearest congener, the modern Eskimo, the ancient cave-man was milder and less given to raising his hand against the life of his fellows than we are wont to suppose; he warred against the animals for food, clothing and implements, not against the men for wives, property or land. Carving and the related arts (painting included) owe their origin, according to Popoff, to primitive man's 'attempt to reach the living animal through its image,' just as the civilised man to-day seeks life in works of art. Magic, then, is the mother of painting and sculpture—a thought aptly expressed by the song of the American Indian medicine-man, 'my drawing makes of me a god.'

Some Causes of Poverty in Art.—According to Mr McGuire, who has sketched the 'Development of Sculpture' (387), small carvings of bone, of ivory, or of wood, appear to be common to every race, and were probably carried on the person. 'Sculpture,' however, 'accompanies a settled stage of society. On the other hand, carving is an art commonly found among the most savage races. The development of skill in carving is often encountered in the most unexpected localities, and in places where no evidences are found of the sculpture of large figures' [the size of statues is known to increase as man occupies continuously particular sites and lives in settlements]. This difference appears directly traceable to the mode of life which savagery entails. Wandering during the hunter period from point to point with the change of seasons, or as game or fruit became abundant or scarce, with no fixed dwellings and with no ability to transport heavy statues, there was no incentive to make them.' Mr McGuire rejects the theory that sculpture owes its origin to 'the artificial

incision of lines upon rock surfaces,' holding that 'a few blows given to a stone, shaped by any of the processes of nature referred to' [conglomerates, erosion by freezing and thawing, carving by wind-blown sand, silt-grinding, water-washing, etc.], 'would develop figures, and would, it is believed, soon lead to a deliberate and intentional shaping of stones.' This seems proved, in some parts of the world at least, by 'the finding of water-washed peebles resembling animals or natural implements, often associated with the remains of the earliest periods of human existence, especially of those of the caves and shelters which were man's first dwelling-places.'

Macaulay is not far from the truth when, in his essay on Dryden, he says: 'The first works of the imagination are poor and rude, not from the want of genius, but from the want of materials. Phidias could have done nothing with an old tree and a fish-bone, or Homer with the language of New Holland.' This point has been almost completely ignored by more than one recent writer on primitive art and by nearly all those who have treated of the art of children. The stimulating and interfering *rôle* of material, in the evolution of the primitive shaping arts especially, is certainly very great, while its retarding, or even retrogressive, effect is often by no means insignificant.

Earth Moulding.—Not very much has been written about earth-moulding by primitive races, but it seems to be quite common. Mr R. H. Mathews has given an interesting account of the ground drawings of the Australian aborigines, which are of four kinds: (1) figures outlined by laying down logs, bark or bushes to a certain height and then covering them with earth; (2) figures formed entirely of loose earth heaped up into the required shape (sometimes figures outlined in bark are placed on top of these); (3) figures, devices, patterns cut into the surface of the ground (the groove being two or three inches wide and about two inches deep) with tomahawks or flat pieces of wood with an edge; (4) figures drawn on the sand with a stick. The size and variety of all these drawings is very great, and some of them 'display the inventive, humorous, and imitative faculties of the natives,' especially as to the habits and institutions of the white settlers. A point of contact with the drawings of children lies just here, in the tendency to caricature. Mr Mathews observes that 'earthen figures formed in high relief or engraven upon the turf, representing human

beings, different animals, and the curious designs called *yammunyamun* are found chiefly at those places where the young men of the tribe are admitted into the ranks of manhood.' Mr J. W. Fawcett is quoted as saying that certain aborigines of the Herbert River region in Queensland amused themselves by drawing with sticks on the beach figures of men, birds, lizards, turtles, canoes, etc.; and Mr S. Gason, of Beltana, South Australia, reports that 'the aborigines, old and young, amuse themselves by portraying various objects on the sand by means of a piece of stick. These drawings consisted chiefly of kangaroos, dogs, snakes, fish and emus, and other birds.'

Another procedure suggestive of children's 'drawings' is described by Mr C. Winnecke as 'a frequent pastime of the natives,' both in South and North Australia: 'To select a clay-pan and on its flat surface to outline circles, squares, and other figures by means of small stones placed in a single row along the outlines of the figures to be delineated. The stones are sometimes carried to the clay-pans from long distances, none being obtainable in the immediate vicinity' (416).

The child (sometimes the adult) at the seaside, or in the sand-lot, offers many parallels here, and how far the imagination may go can be read in Dr Hall's interesting 'Story of a Sand-Pile' (272).

Illustrated Stories.—The great skill shown by children in illustrating, out of their own heads, stories and anecdotes told them by teachers, parents, other children, etc., or even stories invented by themselves, offers a point of comparison with the pictographs, ivory scratchings, carvings and the like of primitive races—Bushmen, Eskimo, cave-men—where we have, beyond a doubt, a similar effort of our remote forefathers to illustrate a story and enjoy with added zest the reminiscence of hunting adventures, conflicts, etc. In the collections of Hoffman, Wilson, Andree we have doubtless many figures of just such an origin. Had we all the product of these primitive minds we would probably find many pendants and parallels for the thousands of illustrations which have followed in the wake of the American experiments with the stories of 'Struwwelpeter,' 'Hans-guck-in-die-Luft,' 'Washington and the Cherry-Tree,' etc., and the German experiments with 'Little Red Riding Hood,' 'The Two Hares,' etc. Illustrative art begins early in the individual and in the race. This is particularly true of

a hunting and fishing people like the Eskimo, as is revealed by the figures reproduced in Dr Hoffman's wonderfully complete discussion of their graphic art. The figures in Wilson's 'Prehistoric Art' often emphasise the same point, apparently. In her brief comparison of Eskimo drawings (from Alaska) with those of civilised children—the Eskimo drawings are by an adult and some children under 14—Mrs Louise Maitland (392, p. 450) notes that 'story-telling or record predominates over representative work.' The Eskimo, as compared with the civilised children, exhibit 'much greater graphic skill in manipulation,' while 'in the composition or arrangement of their drawings, the children in their younger years show a correspondence with the Eskimo; at an older age they pass more frequently to a higher artistic development.' Some of the similarities observed between the drawings of civilised children and Eskimo Mrs Maitland attributes to what Dr Brinton calls 'the tendency of the mind, everywhere and in all conditions, to act in the same manner.'

Earliest Human Art.—The drawings, engravings and sculptures of Palæolithic man are, according to Professor Wilson, 'the foundation and beginning of all art,' and they 'show the natural or original germ of art in the human mind uninfluenced by anything beyond the necessary environment of life and the inevitable conditions of existence' (687, p. 418). The impulse which led early man to the production of these art-forms was 'his love of beauty and his desire to gratify it' —they represent primitive æsthetics: 'They had no occult meaning; they never stood for any great divinity or power, whether natural or supernatural; they were simply lines and dots arranged in ornamental form to gratify man's innate sense of beauty, and because he wished the things he possessed to be beauteous in his eyes' (687, p. 419). These Palæolithic *motifs*, Professor Wilson tells us, were repeated again and again in the civilisation of the Neolithic and Bronze ages, where we see 'how they varied, how they grew, and yet how, down to the end of the pre-historic and the beginning of the historic period, they never got beyond lines or dots, which combined made the parallel lines, the chevron, the herring-bone, the zig zag, and similar simple geometric designs.' The art of the Neolithic epoch was essentially decorative then as contrasted with the animal-forms of the Palæolithic period, and the geometric ornaments 'were principally employed in plastic art,

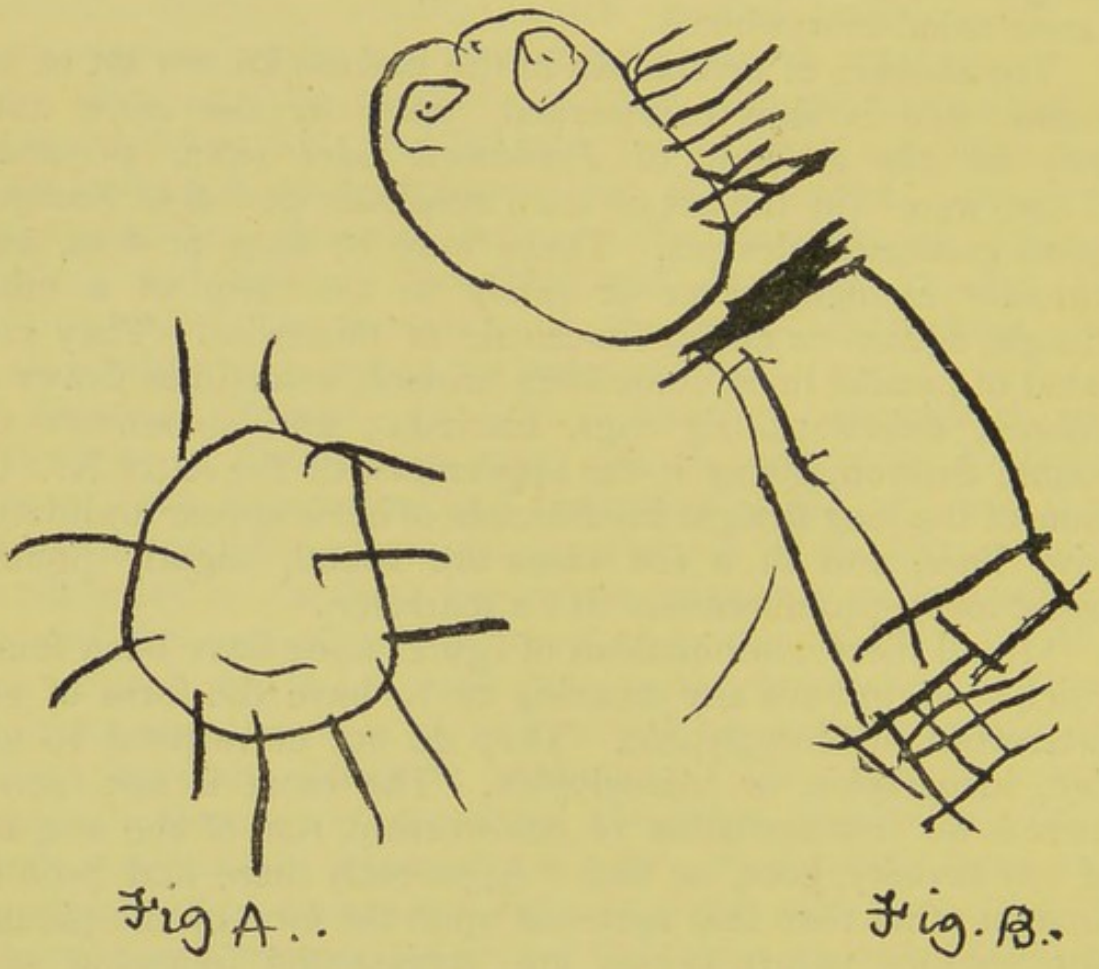
and usually for the decoration of pottery.' The author further holds (687, p. 419) that, 'while there have been inventions and duplicate inventions of new designs and reinventions of forgotten ones . . . as a rule the perpetuation of ornamental designs was by imitation and teaching, passing from generation to generation, from parent to child, and from master to servant or slave.' Professor Wilson seems to sympathise but little with the doctrine of the parallelism of degree of development and thought and action, or with the theory of the uniformity of the human mind everywhere.

The absence of symbolism in the earliest known art of the human race is thus commented upon by the same authority in his account of *Prehistoric Art* (687, p. 412): 'There were' [in the art of the Palæolithic period in Europe], 'some geometric designs. These were by lines or dots, and, curiously enough, never or rarely in the form of a cross, triangle, square or circle, concentric or otherwise. They consisted of parallel lines, sometimes crossed, sometimes drawn in different directions, zig zags, chevrons, and sometimes the double chevron, giving it the appearance of the letter X. On some of the long straight instruments of bone appear undulating wavy lines, and in a few cases are round, slightly pointed projections—protuberances like a mamelon.

'In all these combinations of figures none have been found which seem to have any meaning or to have the form of any letter-word or hieroglyphic. They do not correspond to any sign, ideographic or hieroglyphic. The cross is not found; there is no representation of sun-worship, nor of the sea, nor of any divinity, good or bad. Apparently there had been no thought other than that apparent upon the face of the picture. For instance, when horses are represented following each other, we can understand that there is a drove. When the mammoth is represented, we understand that the artist has seen the animal. When a man is represented following the bison, and in the act of throwing his spear, we can understand that a hunting scene is meant. Beyond these and similar views, no ideas seem to have been attempted. But we are to remember the paucity of the sources of our knowledge.'

Professor Wilson believes the drawings, engravings and sculpture of Palæolithic man 'were drawings made direct from nature, with the original before the eye of the artist,' not copies or adaptations. The present writer has noted more

than once the tendency of the American Indian to draw from life rather than from memory. The following drawing by a girl of six years is a good example of the child's tendency to group things incongruously and to picture them disproportionately, while, at the same time, it shows how early the sun-picture, by imitation or by original drawing, occurs with the young artist. Figure A in the drawing represents 'the sun what be's up in the good morning,' and Figure B the spaniel



DRAWING BY SIX-YEAR-OLD GIRL.
(Fig. A., the Sun ; Fig. B, a Dog.)

dog of a friend. The child (born in Worcester, Mass., of Lithuanian parents) also shows distinct evidence of having been influenced by the pictures, rites and ceremonies of the Greek Church, and with her the cross and ring have already become somewhat symbolic.

Three very interesting examples of the degeneration, degradation and alteration of symbols are given by Colonel Mallery in his discussion of the 'dangers of symbolic interpreta-

tion.'[1] The chevron on the sleeves of non-commissioned officers (chosen, when the modern uniform was planned, from among the various heraldic symbols, because it was easy to form an obtuse angle with two strips of cloth), goes back to 'an honourable ordinary in heraldry, representing two rafters of a house united at the top, originally bestowed on the founder of a house or family thereafter entitled to bear arms.' The initial ℞ of medical prescriptions ('vulgarly called an abbreviation of the word "Recipe"') once 'portrayed the extended wings of Jove's eagle, and was used as a prayer to the king of gods for his aid to the action of the remedy.' The barber's pole of certain patriotic American 'tonsorial artists,' who 'added blue to the red and white, so as to include all the national colours,'—an idea which the negroes, who have taken up so readily the profession, 'have advanced another step, so that their newest poles' [the paper was written in 1881] 'show the blue in a union, with the proper arrangement of stars, and the red and white stripes extending straight instead of spirally,—becomes nothing more nor less than a wooden United States flag of clumsy shape.'

Atavism in symbols characterises the criminal—pathology in symbols the lunatic. As Ferrero remarks, 'there is always a correspondence between the intellectual condition and the system of symbols employed to express the ideas; in the criminal a primitive sign-system corresponds to a mental state, in part primitive and rude; in the lunatic a system of delirious symbols corresponds to a delirious state of ideas.' Unlike criminals, 'madmen seldom employ the ordinary signs or writing, or content themselves with pictography,' but they 'invent special signs, mixing them up with figures, words, letters of the alphabet, and creating a *bizarre* writing very difficult to comprehend, and in itself evidence enough of the disordered condition of their minds.' With the lunatic, also, the symbol does not escape the 'reduction,' to which are subject all his sensations, images, feelings, ideas. These marks of the madman in no way necessarily characterise the pictographs or the tattooing of the criminal (199, p. 190).

General Characteristics of Child Art.—Pappenheim (474, p. 62), summarising the results of the numerous studies of the drawings of children, indicates thus the chief points observed:

[1] *Trans. Anthr. Soc.*, Wash., I. i., 71-79.

1. In the drawing activity of the little child artistic intent is absent, the 'joy of making and doing' (movement of the hand and production of lines) is alone expressed. 2. Limitation in the direction of the technique of drawing renders more difficult to the child the expression of his ideas. 3. Mental activity prevents the child from continuously fixing his attention upon the same object and systematically observing it; the unlimited fancy of the child, stirred by the lines (perhaps unsuccessful) already drawn, wanders away altogether. 4. The child is ruled by one strong aim—to make the drawing with the least possible number of expressive lines. 5. The child uses symbols (schemata) which it has received from other children, or from adults. 6. Habit causes the child often to use the same symbols for related objects. 7. The distinctive characteristics of the object to be drawn, which the child has in his head, are enumerated by him in a linear description. 8. In drawing the child is guided more by his knowledge of the thing as a whole—the concept of its external appearance remains in the background. 9. By a too great admixture of intelligence, the child's sense-perceptions are, for artistic purposes, falsified. 10. The endeavour to draw by imitation an object or a model, or to represent something beautiful, causes the child to lose his pleasure in 'malendes Zeichnen.'

The various factors entering into the drawing phenomena of childhood differ with individuals very much, while environment and opportunity cut short or prolong the processes under consideration. Götze, in his 'Child as Artist,' emphasises the child's love of his 'maze of lines,' his animism—what is for adults a 'not I' is for him an 'I too' (247, p. 7)—and the *naïveté* with which he shares his life, thought, actions with everything and everybody, and the value of drawing as the natural, preparatory stage for writing (herein the child repeats the race).

Stages in Drawing.—In Sully, Barnes, Cooke, and other writers on the subject, many details will be found as to the various periods, stages or epochs of evolution in the drawings of the child. Dr H. T. Lukens (379, p. 167), however, has given perhaps the best general presentation of the growth and fluctuation of the instinct for drawing in children. He recognises four periods, which, with the chief characteristics of each, may be described as follows:—

I. *First Period*, up to about four or five years of age. Here the child scribbles only, and is dominated by interest in the finished product. Practice increases the pleasure felt in drawing.

II. *Second Period*, from about the fifth to the tenth year. Here the drawing becomes the visual foundation for the mental picture, and the child uses a few bold, speaking lines to give expression, or rather to intimate it, for now the child sees not merely the scrawl it produces, but what is behind it, the picture of fancy, which is only hinted, not reproduced in the drawing. This period, which the school so often succeeds in paralysing, is 'the golden age of the artistic development of the child.' This is the creative period *per se;* here the child is likest the real artistic genius, whose product is more of a substitute for, than a strict imitation of, nature. It is the period of Lange's 'artistic illusion.' All this is destroyed when the teacher comes to say, 'Open your eyes, O child, see how much better the model is; draw, paint after it!' for the child by nature is qualified to picture the absent, the imagined, not the cool, classic present set before him.

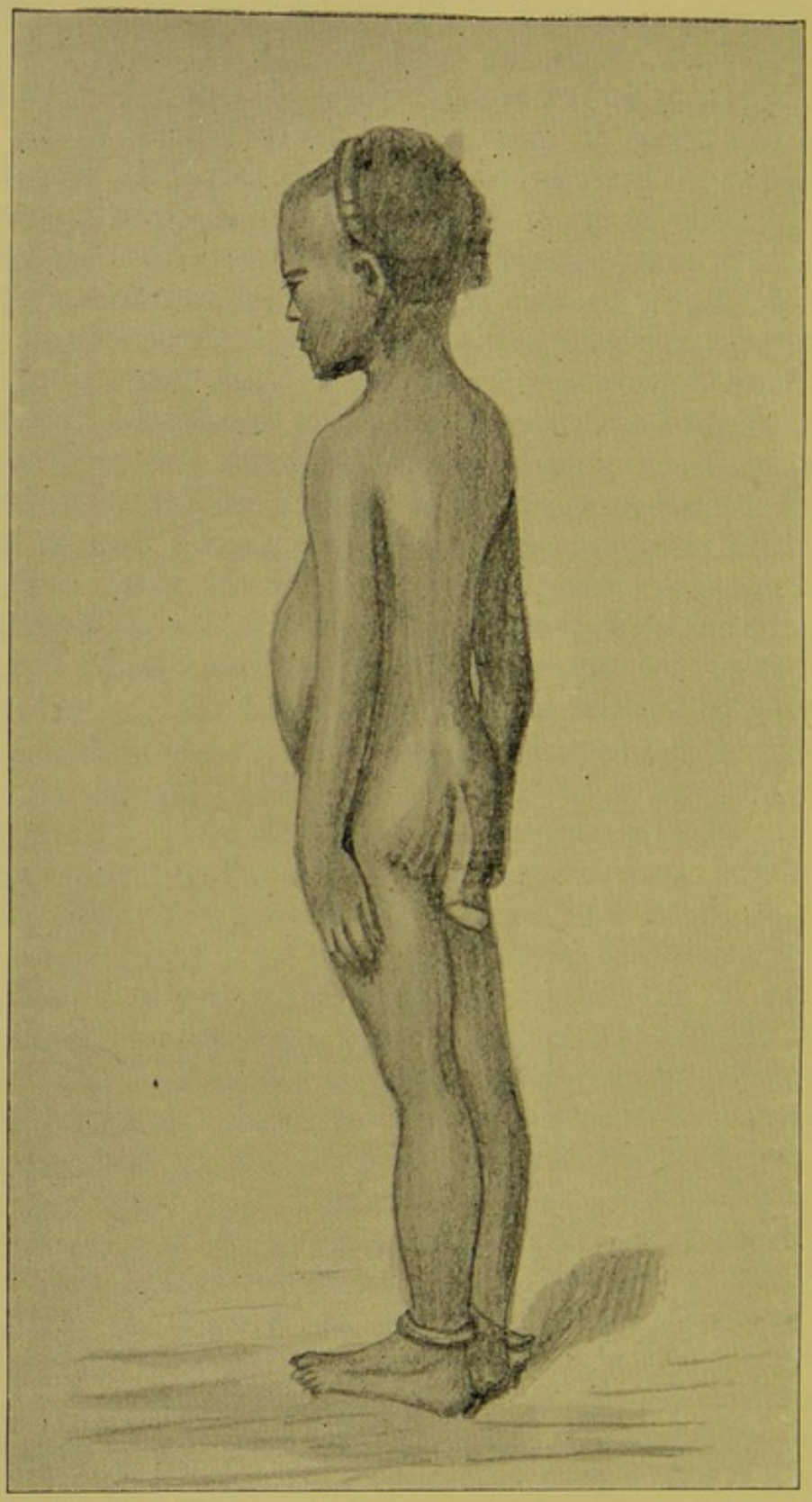
III. *Third Period*, from about the tenth to about the fifteenth year. In the beginning of this period the environment and the school have repressed the productive activity of the child in the endeavour to increase his intellectuality. The child now 'begins to see that his drawing is nothing more than a poor, weak imitation of nature,' and the charm of creative art vanishes with the disappearance of the former *naïve* faith. No wonder so many observers have noted a distinct deterioration both in the pleasure in, and the quality of, the drawings of children, beginning with the tenth or twelfth year—'die Zauber ist hin.' This is the period of 'Barnes' level,' at which most men remain all their lives.

IV. *Fourth Period*, from about the fifteenth to about the twentieth year. For some fortunate individuals, favoured by environment or other stimulus, adolescence exhibits a recrudescence of the old creative power, a reinvigoration of the pristine love of producing. This is the period of 'Miller's rise' in the curve representing the progress of drawing in the child. All these periods are further marked by the fact that the child, when working as a child, draws from memory and imagination, even when he has the object to be drawn before him.

Within the four periods just described, there can be discerned transitional periods, viz., at about the fourth year, around the eighth and ninth years, and about the fifteenth year.

Drawing in Education.—In the course of his appeal for a reform of the drawing-instruction in the public schools, which shall make it 'the school of sight,' not the grave of talent and naturalness (as Hirth has called it), Dr Albert Heim (292) of Zürich observes: 'Many a fifteen-year old boy and many an adult can, *e.g.*, no longer draw the picture of a bird, which at the age of from five to ten years he was able to make *before* any instruction in drawing.' The delight in drawing which reigned in the earlier years has been suppressed under the weight of method and direction, the child's own book, filled with innumerable *naïve* sketches of almost every object, disappears before the sheet with the correctly-drawn ornament or geometrical figure; life no longer calls to him to represent it, the deadest of dead things are fashioned by him at the beck of others. The beautiful curves he has seen in Nature subside before the cube, the square and the triangle, with their uninspiring straight lines. For ten geniuses of the nursery in drawing there remains hardly one in the high school. Ornament, a comparatively late product of the human mind, in its regularity and rigidity, its conventionalism and lifelessness, has been allowed to extinguish that art of drawing in early childhood which by its very 'play' asserts its kinship with real genius. The net result is a few clever ornamentalists and a host of disgusted children, whom different treatment would have permitted to assert more of their inherent love for and delight in drawing. Plaster-casts are always dead beside living nature, and the exaggeration of the artist hardly makes up for lost *naïveté;* besides, they give not at all the right opportunity for individual genius. Like primitive peoples, children draw *naïvely* and well according as they observe, and the old men of the French river-drift period had something more valuable than the mere technique of drawing—they had the genius that reproduces the life-touch. We ought to aim at preserving the genius for drawing innate in the child rather than to create another sort of artist by means of instruction during the school years. Something of 'the atrophy of the power of observation,' and 'the barrenness of results,' which are stated to be the common effects of a twenty years' exist-

ence of drawing as a part of the public school curriculum in New York State, may be read in Mr H. G. Fitz's article (209, p. 755), where emphasis is laid upon the futility of 'putting the child in possession of technical tricks, which make *observing* facts of no account.' Mr Fitz recommends the setting aside or destroying of free-hand drawings as soon as made, to 'remove the temptation to waste time in technical finish that might, to the pupil's lasting benefit, be spent in new efforts at discovery, discriminating differences in various enclosed areas, values or colours.' Thus, according to Mr Fitz, 'we might then come to be able to see the beautiful in Nature spread at our feet, and in common things at our very door, and not, as now, under the name of *art*, hew down the mind of the rising generation to the narrow notion that the beautiful must be sought only on the canvases and in the conventionalities of the past or present age of interpreters, however exquisite or grand their works may be.' We should cease trying to kill the art that made art.



THE BORDERLAND OF ATAVISM.

(A 'soft tail' on a Chinese boy eight years old, drawn by R. A. Cushman from the figure in *Bull. Soc. d'Anthr. de Paris*, 1872, p. 540.)

CHAPTER VII

THE CHILD AS REVEALER OF THE PAST

Evolution Idea known to Primitive Peoples.—Evolution, in some form or other, is now the accepted doctrine of men of science, with few exceptions, throughout the civilised world, and with this theory is bound up the essential oneness of all phenomena of nature and all facts of life. But this is, at bottom, really no new doctrine, but the clearer statement and satisfactory demonstration of a very old one. Greece and India in very ancient times, as the fragments of their philosophies reveal, glimpsed the general doctrine, while particular forms of it belong to savage and barbarous peoples all over the globe. The kinship of all animate, nay, of all animate and inanimate, things—evolution, transformation, adaptation, heredity, degeneracy, selection—are really all very old ideas, known, in rude form, to the ancient philosophers of the Old World and to innumerable primitive tribes, who, quaintly and curiously sometimes, have dimly or clearly glimpsed or anticipated the thought of Lamarck, Darwin, Wallace, Spencer, Haeckel, Cope, Weismann and the other great interpreters of natural science. The Zuñi Indians, for instance, and the Chinese, as Cushing and Purini have recorded, had each their peculiar and well-wrought-out view of the origin or development of man by evolution and adaptation.

The Zuñi legend of the Creation thus describes the condition of men when they first emerged into the world of daylight from cave-worlds below (140, p. 383): 'Men and the creatures were nearer alike then than now; black were our fathers, the late-born of creation, like the caves from which they came forth; cold and scaly their skins like those of mud-creatures; goggled their eyes like those of an owl; membranous their ears like those of cave-bats; webbed their feet like those of walkers in wet and soft places; and, according as they were

elder or younger, they had tails longer or shorter They crouched when they walked, often, indeed, crawling along the ground like toads, lizards and newts; like infants who still fear to walk straight, they crouched, as before-time they had in their cave-worlds, that they might not stumble and fall, or come to hurt in the uncertain light thereof.' The Zuñi creation-myth looks upon the first men as like unto little children in their progress and development, who learned gradually through experience and the instruction of the gods.

Evolution Organic and Inorganic.—Sir Norman Lockyer, in his address 'On Some Recent Advances in Spectrum Analysis Relating to Inorganic and Organic Evolution,' looks upon 'life in its various forms on this planet, now acknowledged to be the work of evolution, as an appendix, as it were, to the work of inorganic evolution, carried on in a perfectly different way,' although there are innumerable parallels in the process (362, p. 107). The recent advances of spectrum analysis have established 'a quite new bond between man and the stars,' for 'not only have we hydrogen, oxygen and nitrogen among the gases common to the organic cell and the hottest stars'—the beginnings of organic and of inorganic evolution—but chloride of sodium, sodium, carbonic acid, calcium, magnesium and silica. By the working over and over again of this primitive material higher and higher forms are produced, dissolution leading to reproduction and evolution. According to Lockyer, 'the first organic life was an interaction somehow or other between the undoubted earliest chemical forms,' and death (dissolution, destruction of parts or wholes) 'not so much a question of *luxury* for the living (Professor Weismann holds that "life became limited in its duration, not because it was contrary to its very nature to be limited, but because an unlimited persistence of the individual would be a luxury without a purpose"), as one of *necessity* in order that others might live; it was a case of *mors janua vitæ*.' Very important in this connection was 'the presence or absence, in all regions, of an excess of the early chemical forms ready to be used up in all necessary proportions,' and it may be that 'the difficulty was much greater for land than for sea forms; that is, the dissolution of parts or wholes of land forms proceeded with the greatest rapidity.' From the simple primordial life-germs have proceeded, by 'a long series of modifica-

tions, or transformations, or both,' the variety of life on the earth to-day, and this organic evolution has been of such a nature that, 'The individual organic forms need not continuously advance; all that is required is, that there shall be a general advance—an advance like that of our modern civilisation—while some individual tribes or nations, as we know, stand still, or become even degenerate.' This general continuity is, in a certain sense, reflected in the life of the individual, for in it the life-history of the earth is reproduced. Sir Norman Lockyer assumes that life on earth began with the common life-plasma, out of which developed, on the one hand, the algæ-like first aquatic plants, and, on the other, the monera and amœbæ, the first animal forms, while, in time, from the fishes were developed the amphibians and reptiles, from which latter came the birds and mammals, and, by continued evolution of the mammals, the anthropoids and man. Both inorganic and organic evolution have started from 'a stage of simplest forms,' and progress has been, in both cases, 'a growth in complexity.'

Plant and Animal Evolution.—The common life-plasma, from which, along two divergent lines, vegetable and animal, the development of life on the globe has taken place, was, probably, according to Professor L. H. Bailey, 'more animal-like than plant-like.' The mycetozoa of the zoologists, the myxomycetes of the botanist, organisms which 'at one stage of their existence are amœba-like, that is, animal-like, but at another stage are sporiferous, or plant-like,' preserve, 'closely and possibly exactly, the stage in which this life-plasma first began to assume plant-like functions' (19, p. 453). Since the divergence 'the symbol of animal evolution has been bilateralism, and the symbol of plant evolution circumlateralism.' Plants lost bilateralism and concentration when they became, as Cope has it, 'earth parasites,' and in their search for food had to become centrifugal, abandoning the tendency towards 'the cephalic or head-forming evolution,' which materialised in the worms, creatures 'characterised by a two-sided or bilateral, and, therefore, more or less longitudinal structure,' and from which worm form 'all the higher ranges of zootypic evolution have sprung, and one is almost tempted to read a literal truth into David's lamentation that "I am a worm and no man."' Professor Bailey prefers 'retarded evolution' as better than Cope's 'degeneracy,' or such terms as catagenesis or decadence to

express the development that has gone on in the plant-world, but even such a term is hardly suitable, for 'plant types exhibit quite as complete an adaptation to an enormous variety of conditions as animals do, and there has been rapid progress towards specialisation of structure.' Nor has there been in the plant-world as a whole 'any backward step, any loss of characters once gained, any stationary or retarded periods.' The greater part of present differences in organism are 'the result, directly and indirectly, of external stimuli, until we come into those higher ranges of being in which sensation and volition have developed, and in which the effects of use and disuse, and of psychological states have become increasingly more important as factors of ascent.' In other words, heredity itself is 'an acquired character, the same as form or colour or sensation is, and not an original endowment of matter'; the power to transmit hereditarily 'did not originate until for some reason it was necessary for a given character to reproduce itself, and the longer any form or character was perpetuated the stronger became the hereditary power.' The weakness of heredity is characteristic of the earlier forms of the life-plasma, and there is little doubt of the general truth of the statement put forward by Professor H. S. Wilson, in his *Geological Biology*, that 'mutability is the law of organic action, permanency the acquired law' (19, p. 458). Mere growth, as Bailey points out, is variation and results in difference; plants, at least, 'cannot grow without being unlike,' and the power of growth is sufficient in itself 'to originate many and important variations in plants,' a view shared essentially by Cope and Eimer. The thesis of Professor Bailey's more recent study, *The Survival of the Unlike*, is that dissimilarity of offspring, as compared with their parents, is a factor favourable to their survival in the world of life, *i.e.*, dissimilarity or variability chiefly due to the action of the *milieu* and environment ('soil, weather, climate, food, training, conflict with fellows, strain and stress of wind and wave and insect visitors'), the result being that 'there are as many species as there are unlike conditions in physical and environmental nature, and in proportion as the conditions are unlike and local are the species well defined.' The chief merit in the survivors being unlikeness, the fittest being really the unlike, Bailey proposes, in lieu of the 'survival of the fittest,' the expression the 'survival of the unlike,' as presenting in a new light 'the old truth of vicarious or non-

designed evolution.' Nature's end, according to Bailey, is 'perfect adaptation'; nothing is known to her *per se*, as species, or as fixed types, for 'Species were created by John Ray, not by the Lord; they were named by Linnæus, not by Adam.' The unlikeness of plants enabling them to survive by entering fields of least competition, a phenomenon ultimately due to the plasticity of the original life-plasma, the influence of external stimuli, the growth-force and sexual mixing, is the greatest fact in the vegetable world. Such is, in brief, the outline of the evolution of the present flora, from its starting-point in aquatic life. Longevity, winter quiescence, sizes, shapes and habits, have come by adaptation to conditions of life; 'the first plants had no well-defined cycles, and they were born to live, not to die'; death is not an inherent, but an acquired character of life-matter, 'a result of the survival of the fittest,' the sacrifice of some for others. A wonderful story of adaptation to environment and the survival of the unlike is contained in the history of the condition of the plant-world after the earth began to age and grow colder. Professor Bailey has, apparently, none too much sympathy with 'the attempt to evolve many of the forms of plants (spines, prickles, acrid and poisonous qualities, etc.), as a mere protection from assumed enemies,' and his statement that the original life-plasma was more animal-like than plant-like, is also in opposition to the majority of authorities who presume the derivation of animal from plant, and not the divergence of plant-life from something nearer the animal.

Mammalian Evolution.—Darwin, after a most rigorous and extensive investigation of the phenomena of animal life and variation, came to the conclusion that 'man is the co-descendant with other mammals of a common progenitor,' and still 'bears in his bodily frame the indelible stamp of his lowly origin.' And, in spite of the efforts of naturalists like Wallace to declare that the mind of man is of a different order of descent than that of his body, the general results of the researches in comparative animal and human psychology since Darwin's time are to proclaim for his intellectual endowment the same lowly origin, traces of which yet linger in his feelings and thoughts, his instincts and his emotions. But while it is certain that man is the highest product of incalculable ages of vital evolution, and that he springs, physically and mentally, from the animal kindred beneath him, proof of such kinship

being fairly abundant, the steps of his genealogy have some of them, notwithstanding the exact enumeration of Hæckel, yet to be made out, while dogmatism about some others is scarcely justifiable.

The ancestor of man and the other mammals, 'the pro-mammal,' must have been, according to Professor Osborne,[1] 'a small terrestrial animal, either insectivorous or omnivorous in its habits.' Osborne emphasises the importance of 'the law of adaptive or functional radiation, whereby mammals have repeatedly diverged from small unspecialised focal types into aquatic, arboreal, volant, herbivorous and carnivorous orders.' It would also appear that just at present the evidence points to the derivation of all aquatic types out of land types, the former being secondary.

Professor O. C. Marsh, the eminent American palæontologist, expressed himself thus[2] concerning the origin of mammals: 'The birds, like the mammals, have developed certain characters higher than those of the reptiles, and thus seem to approach each other. I doubt, however, if the two classes are connected genetically, unless in a very remote way. Reptiles, although much lower in rank than birds, resemble mammals in various ways, but this may be only an adaptive likeness. Both of these classes may be made up of complex groups only distantly related. Having both developed along similar lines, they exhibit various points of resemblance that may easily be taken for indications of real affinity. In the amphibians, especially in the oldest forms, there are hints of a true relationship with both reptiles and mammals' (406, p. 409). Professor Marsh is, therefore, led to think that 'in some of the minute primitive forms, as old as the Devonian, if not still more ancient, we may yet find the key to the great mystery of the origin of mammals.'

It is in the light of such statements that we should read Hæckel's scheme of the genealogy of man, in so far as the pre-human and pre-anthropoid stages are concerned, for there are many links that cannot yet be filled to a certainty. Dubois's discovery in 1891, in a river-deposit of Java, of the remains of what he termed the *Pithecanthropus erectus*, seems to have added one new link to the chain which must ultimately be revealed

[1] *Nature*, Vol. LVIII. p. 427.

[2] At the International Congress of Zoology (Cambridge, England), August 25, 1898.

as connecting man with his precursors, and with their cognates, the anthropoids.

Professor A. S. Packard, commenting upon the facts of the elimination of countless tertiary mammals, the great progress of specialisation, and, in particular, the gradual increase in the size of the brain ('those of certain existing mammals being eight times as large in proportion to the bulk of the body as those of their early tertiary ancestors'), says (471, p. 321): 'This, of course, means that animal shrewdness, cunning, and other intellectual qualities, the result of semi-social attrition and competition, had begun to displace the partly physical factors, and in the primates these may have in the beginning led to the appearance of man, a social animal, with the power of speech, and all the intelligent moral and spiritual qualities, which perhaps primarily owe their genesis to increased brain-power.' And so it came about that the final outcome of nebular, geological, biological evolution appeared in man, 'whose physical development was practically completed at the beginning of the quaternary period, and whose intellectual and moral improvement have, as it were, but just begun.' The 'capacity for progress,' which is the characteristic of man above all other creatures, has now become his chief distinctive mark, and writers like Novicow, in his discussion of the social struggles of the human race, can catch glimpses of a law of acceleration, a principle ruling in social phenomena, like that of Galileo in physics. But, as Darwin said, man 'bears the indelible stamp of his lowly origin,' and ever in the midst of progress seem to surge up again the traits of his ancient kin.

Atavism.—With the immense and varied ancestry man has had, and the infinitude of his connections with the rest of the animal world,—Gadow, in his classification of 'recent and extinct vertebrates,' admits 7328 species of fishes, 925 species of amphibia, 3441 species of reptiles, 9818 species of birds, some 1000 mammifers—atavism, 'discontinuous heredity,' as Virchow terms it, or 'a modality, the generic form of which is heredity,' according to Dally, is a most interesting as well as difficult subject of investigation, one in which facts of exceedingly small importance may be excessively magnified and others of vital significance completely ignored, especially when the mental development of the individual and the race is added to the physical, and studied in all its ramifications.

Wide Range of Atavisms.—Naturally enough, the physical

'atavisms' of man, those bodily resemblances to his remote ancestors, are the most striking. The great range of such possible 'reversions' (for it has been questioned whether many of them may be strictly so termed) may be seen from the following table, compiled from the data in Talbot's study of *Degeneracy*, and Demoor, Massart and Vandervelde's *Regressive Evolution* :—

No.	Characteristic	Reversion, or Atavism to or towards Condition of
1.	Cyclopean Monsters	Single-eyed sea-squirts (ascidians)
2.	Large Orbit (Eyes)	Lemurs
3.	Supernumerary Teeth	Lemurarius ; limnotherium
4.	'Hutchinson's Teeth'	Chameleon
5.	V-Shaped Dental Arch	Reptiles
6.	Saddle - shaped Dental Arch	Lower mammals
7.	Thirteenth pair of Ribs	Gibbon
8.	Tail (caudal remnants)	Monkeys below anthropoids
9.	Supernumerary milk-glands	Lemurs
10.	Gout (liver, kidney)	Sauropsida
11.	Myxœdematous skin	Invertebrates
12.	Ichthyosis (skin)	Fish
13.	Spina bifida	Lower Fish
14.	Merycism (rumination)	Ruminants
15.	Multiple Births	Lower Vertebrates

Some Physical Atavisms in Man and their Relations.—An excellent *résumé* of the data concerning 'Atavism in Man' was published by Dr Blanchard in 1885, and from his article and other more recent sources the following table has been compiled, which contains some of the chief 'atavisms' of a physical nature observable in the human race, and indications of their rarity, frequency, etc. :—

No.	Characteristic.	Frequency, Rarity, Normality, etc.
1.	Small cranial capacity	rare in tall human races ; more or less frequent in idiots, earliest known man ; normal in gorilla, chimpanzee, etc.
2.	Marked depressions on internal face of cranial vault	rarest in white race ; more common in lower races of man, idiots, degenerates ; normal in most quadrupeds

No.	Characteristic.	Frequency, Rarity, Normality, etc.
3.	Anterior commencement of ossification of sutures	rarest in highest types of man ; more common in some lower races (Negroes, *e.g.*), idiots, degenerates ; normal in apes
4.	Persistence of frontal suture	rarest in some lower races of man ; more common in highest races, most common in white females ; normal in human fœtus, most mammifers
5.	Interparietal (epactal) bone	rare in white adults ; more common in several species of monkeys, human fœtus, ancient Peruvian and Arizonian Indians ; normal in the rhinoceros, some rodents, most marsupials
6.	Reversed pterion	rare in white race ; more common in some of the lower races of man (Negroes, *e.g.*) ; normal in apes
7.	Divison of temporal bone	rare in apes and man ; normal in vertebrates, except mammifers
8.	Persistence of mastoido-temporal suture	more or less frequent in man ; normal in horse, etc.
9.	Basiotic (inter-occipito-sphenoidal bone	rare in man (except monsters) ; normal in simœdosaurus
10.	Median occipital fossa	rare in highest types of man ; more common in some lower races of man, degenerates, criminals, the gibbon ; very little developed in gorilla, orang, chimpanzee ; normal in many mammifers
11.	Absence of nasal suture	rare in Europeans ; more common in some lower races of man (Hottentots, Bushmen, etc.) ; normal in apes
12.	Intermaxillary bone, *os incisivum*	rare in adult man, older children, and many adult apes ; more common in human fœti, very young infants and apes ; normal in ornithorhynchus
13.	Styloid apophyses of vertebræ	rare even in Negroes ; more common (rudimentary) on some vertebræ in *Hylobates ;* normal in apes
14.	Simple apophysis of cervical vertebræ	rare in white race ; more common in some lower races (Hottentots, *e.g.*) ; normal in anthropoids and other apes
15.	Tail, caudal vertebræ, etc.	rare in adult man and anthropoids ; more common in young children, certain East Indian peoples ; normal in human embryos up to fourth month, many lower animals
16.	Angle of torsion of humerus notably inferior to 160°	rare in white race ; more common in lower races and prehistoric man ; normal in anthropoids, monkeys, carnivora

No.	Characteristic.	Frequency, Rarity, Normality, etc.
17.	Olecranic perforation of humerus	rarest in white race; more common in lower races and early man; normal in anthropoids and certain other monkeys
18.	Great toe shorter than other toes	rare in white race; more common in lower races of man, human embryo; normal in anthropoids
19.	Prehensile foot; wider space between first two toes	rare (except by training) in adult whites; more or less frequent in young children, some East Asiatic peoples — Chinese, Japanese, Negroes; normal in anthropoids
20.	Exaggerated development of canine teeth	rarest in white race; more common in lower races (Australians, Melanesians, etc.) and prehistoric man; normal in apes
21.	Division of left lobe of liver, *lobulus caudatus*	more or less frequent in man, orang, chimpanzee, gibbon; normal in gorilla, some gibbons, other monkeys, other mammifers
22.	*Lobus impar* at base of right lung	not very rare in man; more common in lower races, human monsters; normal in quadrupeds
23.	Disposition of hair on arms	normal in man, anthropoid apes, some American monkeys
24.	*Hypertichosis universalis*	rare in white race (except *lanugo* of embryo); more common in lower races of Eastern Asia; normal in anthropoids, monkeys, other mammals
25.	Absence of lobule of ear	rarest in white race; more common in some of the lower races, idiots, *cagots;* normal in apes
26.	Ability to move the ear	not exceedingly rare in man—rarest in the white race; normal in quadrupeds
27.	Lacrhymal caruncle, nictitating membrane of eye	very rudimentary in white race; often exaggerated in some lower races of man; normal in fishes, sauropsidians (except ophidians), many vertebrates
28.	Multilobate or separate kidney, Wolffian body	not very rare in man; normal in ophidians and birds (embryo)
29.	Retention of testicles in abdomen, cryptorchidia	not very rare in man; normal in monotremes, cetaceæ, pinnipeds, elephants, etc.
30.	Hypospadias, imperforate, posteriorly furrowed penis	rare in man; normal in certain reptiles (crocodile, etc.)
31.	Bifid gland, bifid penis (anteriorly)	rare in man; normal in monotremes, very many marsupials
32.	Exaggerated development of *labia minora* (female genitals)	rarest in white races; more common in some lower races (Bushmen, Hottentots); normal in certain anthropoids, chimpanzee especially

No.	Characteristic.	Frequency, Rarity, Normality, etc.
33.	Double uterus, double vagina	not extremely rare in woman; normal in most marsupials
34.	Bilobate placenta	rare in woman; normal in Old World monkeys

'*Rudimentary*' *Organs. Regressive Evolution.* — The so-called 'reduced' or 'rudimentary' (for the two words are synonymous with some writers) organs of man are very numerous. Advance has been often, not by the development of new organs, but by the reduction of old ones,—in a sense, every progress has seen a regression. In his discussion of 'Senescence and Rejuvenation,' and elsewhere, Professor C. S. Minot emphasises the evolutionary *rôle* of the loss of characters. Evolution 'depends not only on the acquisition of new characteristics, but also very largely on the loss of characteristics; this loss, exemplified in the gill cleft and arches of the higher vertebrates, affects the early embryonic stages, apparently to allow the embryonic material to undergo a new development.'

In the course of phylogenetic evolution all organisms have suffered the loss of some organ or other; the lost organ persisting sometimes in a reduced state in the individual members of the species, or being found in organisms which are considered ancestors of those not possessing it. The widespread character of this 'survival of reduced organs' is emphasised by Demoor, Massart and Vandervelde, in their account of regressive evolution in biology and sociology, etc. In man, among other 'reduced organs,' we have the hair on the surface of the body (which shows, however, sporadic increase), the last molar (indeed, according to Hertwig, all the teeth, part of the tegumentary system, are only the spine-scales of the rays introduced into the buccal cavity); the terminal epiphyses of the vertebræ (characterising certain mammals in youth, though lost in the Sirenians); the cervical vertebræ (more numerous and functionally important in the crocodile, *e.g.*); the coccyx (the remnant of the tail, so enormously developed in certain of the vertebrates); the little horns of the hyoid bone, the coracoïd apophysis, the inter-clavicular ligament, etc.; the muscles for raising the

skin, the muscles of the outer ear and the motor muscles of the tail (well developed in most of the mammifers), the intra-acetabular (contained in the cotyloid cavity) part of the deep flexor toe-muscle (which though existing in a functional state in certain animals, young ostriches, *e.g.*, has completely disappeared in the orang-outang); the pineal gland (last relic of a formerly functioning visual organ), the *filum terminale* of the spinal marrow (continuing the spinal marrow to the end of the coccyx); the cœcum and the vermiform appendix (functional in the ruminants), the valvules of the intercostal veins (destined to indirectly favour the ascent of blood by preventing its fall, in the quadrupeds, with whom the intercostal veins are vertical, not almost horizontal as in man); the nose (a reduced organ of Jacobson); the reduced third eyelid; the Darwinian tubercle on the ear (the relic of an ancestral long and pointed ear); the Wolffian body (a primitive kidney), the epidydymus, the organ of Rosenmüller, the *vas aberrans*, etc. Besides these reduced physical organs, the authors note, we have numerous survivals of reduction in the social organism, even in the cities, civilisations, states and societies of most recent formation — religious, juridical, institutional, social survivals. Among these might be mentioned: circumcision (as practised by American Jews); certain forms of salutation (in democratic countries); the Lord's Supper (in Unitarian churches); the calendar (the week and month names); the town-meeting (surviving in New Haven, Connecticut, alongside the city council); the mass-meetings (in Canadian towns and cities); birth, marriage and funeral rites and ceremonies; political and regimental *mascots* and amulets of all sorts; fasting and stated feasts; marriage by simple consent (still legal in Scotland and New York); the subjection of women and the unequal privileges of the husband, etc.

'*Hydro-Psychoses*' — *Water-atavisms.* — In his paper on 'Hydro-Psychoses,' Dr F. E. Bolton brings together some of what he terms 'the abundant proofs of man's pelagic ancestry' —the vestigial and other characters, which, as Drummond says, 'smack of the sea,' hints of the aquatic stages, from the earliest water life to the 'amphibian interlude,' which preceded his real land life. And an 'ancient and fish-like tale' it is in many respects. Among the chief 'water-atavisms' are the following:—

1. The fish-like and amphibian-like appearances of the early human embryo—made much of by Drummond and others.

2. Certain fish-like appearances of the brain of the human embryo in its early stages—emphasised by De Varigny.

3. The fish-like type of the construction of the heart of the embryonic young of air-breathing vertebrates at a certain stage of their development — discussed by Romanes after Darwin, etc.

4. The lungs of air-breathing vertebrates, which have superseded gills, and are themselves the modified swim-bladders or floats of fish—as Darwin noted.

5. The visceral clefts of gill-slits in the neck-region, discernible in the human embryo when 3-4 mm. long, but beginning to disappear by the fourth week of fœtal life—one of the first 'vestigial structures,' to be discussed, and productive of many extravagant theories. According to various authorities, the metamorphoses of these embryonic gill-slits have produced the thymus and the thyroid gland, the mouth, the olfactory organs, the middle and outer ear, etc. ; but a good deal of this is very doubtful. Children are born sometimes with the gill-slits, not only externally visible, a rather common occurrence, but open—while small openings in the neck, round patches of white skin, etc., may continue to mark the place of these clefts for a long time. The so-called 'neck-ears' belong to the same class of anomalies. In their study of congenial affections of the neck and head, Lannelongue and Ménard attribute many malformations of the ears and neck to the persistence of piscine or amphibian stages of development in the embryo (349).

6. The hand of man, while in function one of the most highly developed of organs, is in shape and bones 'more like the primitive amphibian paddle than is the limb of any other mammal.' There is thus justification for the statement of Emerson, made, according to Moncure D. Conway (501), in the winter of 1833-1834, 'the brother of man's hand is even now cleaving the Arctic Sea in the fin of the whale, and, innumerable ages since, was pawing the marsh in the flipper of the saurus.' Many anomalies and peculiarities of hands, feet, limbs and digits can be attributed to the fact that 'the human limbs are developments from the fin-folds as found in fishes and the human embryo' (625, p. 262).

7. The swaying from side to side, and forward and backward, very noticeable in small school-children, and possibly other reflex rhythmic and oscillatory movements, may be 'recrudescences of former aquatic life.'

8. Many of the sensations had during sleep,—gliding, flying, hovering, swimming, floating, jumping, etc.—point, perhaps, to ancient aquatic existence, and are a 'faint, reminiscent atavistic echo from the primeval sea,' to use the words of President Hall.

9. The tendency of women to commit suicide by drowning (much more marked than in men), may sometimes be explained by 'a temporary or permanent suspension of control by the higher psychic centres allowing a recrudescence of the old love for aquatic conditions.'

10. The extreme delight (after the shock of the first contact) taken by most babies in splashing and tumbling about in water, the keen joy of children in paddling, splashing about, lying down in and capering about in water, the passionate love of bathing and swimming, and of being out in the rain, not confined to children and youth, but shared often by adults—all this suggests us one factor, at least, 'a survival of the old time life in an aquatic medium.'

11. The great *rôle* played by water in the primitive concepts of life everywhere in religion, mythology, poetry, philosophical speculation, child-lore, etc., suggests 'psychic reverberations' from ancient physical facts.

Useful for comparison with these atavistic traits in man is the study of such creatures as have retrograded from land-animals into water-animals or are in process of becoming such: The whale, porpoise, dolphin, once quadrupedal mammals, but modified in form to suit sea-life and swimming, until they are very fish-like in appearance; the seal, a carnivorous animal adapted to a life in the water; the dugong and manatee; the walrus, the sea-lion, the beaver, the South American web-footed opossum, the duck-billed platypus, the polar bear, etc., all show the modifying effects of a partial sea or water life.

In a very interesting paper on 'Survival Movements of Human Infancy,' Dr A. A. Mumford (451, p. 297) suggests the possible derivation from the movements and habits of man's aquatic ancestors, among other things of the following: (*a*) the 'paddle-movement' of the hands of the waking child during the first three months of life—'slow, rhythmical movements of flexion and extension occur, which, instead of possessing the quick, incisive character of voluntary movements, partake of the sluggish rhythm so familiar to the visitor to the tanks of an aquarium; (*b*) the stroking (floor, table or other

surface) movements, palms flat downwards, fingers directly forwards, as the young child when crawling.

Monkey Atavisms.—The human infant, it will readily be seen, may start in life with not a few reminiscences of the pathway over which the race and animal-kind have travelled, some of which he is sure to lose ere he comes into the estate of mankind. It is with considerable justice, then, that Mr S. S. Buckman, in his entertaining studies of 'Babies and Monkeys' (89, p. 372), plays havoc with the fond delusion of parents, nurses, and visitors, that the infant is the 'very image' of its father or its mother, a statement which is 'a gross libel, sometimes on the baby, sometimes on the parent.' It is, indeed, hard to believe 'that the small-jawed, long and prominent-nosed individual, with high forehead, was, in babyhood, prognathous, short and snub-nosed, with a remarkably receding forehead,' for the differences between the baby and the adult, in the human race, are often 'greater than the differences between some species of animals.' The mother is sometimes nearer the mark, when she styles her offspring 'little monkey,' and the pet and scolding names of children all over the world run in like direction and give, as it were, evidence of an unconscious belief of the animal resemblance and brute ancestry of the human young. A curious list of such appellations is given by President Hall, in his paper on 'Some Aspects of the Early Sense of Self' (275, p. 368).

Among the bodily characteristics which smack of the monkey in the human child, Mr Buckman notes the following :—

1. Nose.—The word *simia* (whence our 'simian' is probably derived from the Latin *simus*, Greek σιμός, 'flat or snub-nosed.' 2. Furrow below nose in upper lip, often persisting noticeably in adults, but very marked in babies and young children (relic of a divided lip lower down in the animal scale), more noticeable in the lemurs than the platyrrhine monkeys, and seemingly not present in the catarrhines. 3. Pouch-like cheeks of baby (well seen in the cherubs of art), recalling the food-pouches of the *Cercopithecus*. 4. Rudimentary tail and depression (so hard to wash in children) at base of vertebral column,—'the tail used to protrude there once' (compare the large tail-mark in the adult gorilla). 5. The greater development of arms than legs (adapted for sustaining the body and for swinging). 6. Practical nonuse of thumb (monkeys use it very little). 7. Movements and use of foot. 8. Growth of

hair on child's head from crown to forehead, as in *Cebus vellerosus* (in a flow of rain the head hung down and like motions encouraged the growth of the hair in that particular way). 9. Direction of hairs on arms ('rain-thatch'). Dr J. O. Quantz, in his essay on 'Dendro-Psychoses,' gives a summary of the arguments favouring the arboreal ancestry of man, and Dr Mumford, in his 'Survival Movements of Human Infancy,' traverses some of the same ground.

In his study of 'Some Aspects of the Early Sense of Self,' President G. Stanley Hall enumerates the following atavistic or pseudo-atavistic peculiarities in very young children:—

1. Finger-movements resembling, on the one hand, the counting and tallying methods of primitive man, and, on the other, the recrudescence of these in arithmomania.

2. Clutching and clinging with convulsive intensity to the hair or beard of adults, suggesting 'the obvious atavistic relation to the necessity for anthropoids of arboreal habits to cling to the shaggy sides of their parents.'

3. Marked tendency to pull out their hair, 'as if by some trace of the atavistic instinct which has caused the depilation of the human body.'

4. Biting their own flesh or the flesh of others, their toys, etc., in anger, suggesting 'that along with the teeth there is also growing the strong psychic disposition to use them as primitive animals do theirs.'

5. Acts connected with the excretions of bladder and bowels, suggesting 'many scatological rites of savages.'

6. The persistent denudation and stripping off of clothing —'morbid and atavistic.'

7. Fear of strangers, especially those with too unusual dress, features, acts, etc.—'owing, perhaps, to some reverberations of the ancient war of all against all in the long and bitter struggle for existence.'

Among the movements noted by Mr Buckman as evidences of the anthropoid ancestry of man, as atavisms in the human child, are the following:—

1. In grasping, *e.g.*, a glass or a flower-pot, the infant (not using the thumb) seizes the rim between the fingers and palm. 2. Ability to twist the sole of the foot sideways in a straight line with the inner part of the leg (characteristic of a tree-climbing animal). 3. Wonderful power of movement of toes together or apart. 4. Prehensile power of toes. 5. Predilec-

tion for rocking in cradle and similar movements (reflex of swaying to and fro of tree-branches). 6. Climbing instinct of boys, and 'the insane desire to climb upstairs,' so common in young children. 7. Bow-leggedness of children learning to walk (advantageous position for tree-climbing), with this may be connected 'the ease with which bicycle-children get bow-legged.' 8. When child first stands up the outer part of the foot is put on the ground, the toes turned in, heel not touching the ground (heels of monkeys do not touch branch in walking, etc.). 9. 'Sitting on heels.' 10. Instinctive stealing and seizing things. 11. 'Taking things to bed,'—with some young children the bed is a sort of museum. 12. Putting between legs articles which are sought to be taken away by others (a monkey habit). 13. Picking at anything loose, *e.g.*, wall-paper, to tear it off, 'survival of bark-picking in search of insects.' 14. Picking parasites off one another. 15. Fondness of children for rolling (ancestors got rid of parasites in that way). 16. Scratching of head (monkeys notoriously infected with parasites). 17. Thumb-sucking in childhood, pencil-sucking in later life (also cane-sucking of 'dudes' and 'mashers'), and sucking of various objects by adults of one or of both sexes (monkeys' food is largely of a nature to encourage sucking). 18. Exposure of canine teeth in anger, etc. (monkey ancestors fought with one another). 19. Instinctive fear-movements at sight of snakes (snakes are the great enemy of monkey young). 20. Mobility of facial expression. 21. Movements of nose and nostrils. 22. Elevation of eyebrows and like gestures.

The 'clinging power' of infants was discussed in 1891 by Dr Louis Robinson, in his article 'Darwinism in the Nursery.' Dr Robinson found that of sixty children less than one hour old, all but two were able to sustain the whole weight of the body at least ten seconds, while twelve held on for half a minute, and three or four for nearly a whole minute—nearly all at the age of four days being able to hold themselves suspended for half a minute. When two or three weeks old, children showed a maximum clinging power (one and a half minutes, two minutes, two minutes and thirty-five seconds—the last in the case of a child three weeks old). It was also noted that one child, who had let go with his right hand, continued to sustain his weight with the left alone for five seconds. In the opinion of Dr Robinson, Dr Quantz, and other recent observers and writers, this seemingly purposeless possession of extraordinary strength

in infants 'goes to show that our ancestors were tree-dwellers, and that the children clung to their mothers whose hands were occupied in climbing from branch to branch. Young apes, as a rule, hang beneath their mothers, holding on by the long hairs of their shoulders and sides. Those that failed to do this would tumble to the ground or be left behind, and fall a prey to enemies from which the mothers were fleeing. Hence, natural selection would bring about a high degree of this clinging power' (452).

These writers point out also that 'the reflex act of grasping an object which touches the palm can be of no value to the child now, except to point to a former period when life itself depended upon it'; that predominant hand-use by man's arboreal ancestor is indicated by 'the child's employment of only its hands in the first stages of creeping, while the feet are dragged behind'; that the child's method of grasping an object, taking it between fingers and palm, not putting the thumb on the opposite side, recalls the fact that man's arboreal ancestors in going from bough to bough would strike the branches palm first from above downward, grasping with the fingers'; that the frequent inability of children under six or seven years of age 'to extend the hand perfectly straight' is a result of 'thousands of years of bough-grasping.'

In connection with Dr Robinson's observations, M. J. Vallot[1] maintains that there is often a difference between children and monkeys in the manner in which they support their weight by the strength of arms and fingers: 'Children seize the branch to which they cling by applying the thumb to the index finger, while monkeys apply it on the other side, so as to hold the branch completely between the thumb and the other fingers. This manner of holding oneself suspended without opposing the thumb persists in man, and it is in this fashion that all children suspend themselves when learning gymnastics until the teacher has taught them the opposition of the thumb.'

The fact that in man (and not in monkeys) there is a constant curve of the fingers, the second and third phalanges presenting always a slight incurvation; the second finger curves laterally toward the third, the fourth and fifth toward the third, and the third towards the fourth, is explained by Regnault[2] as a result of the different *rôles* of the fingers in prehension with the monkeys and with man, and to the limited

[1] *Rev. Scient.*, XLIX. p. 348. [2] *Rev. Scient.*, 1894.

opposition of the thumb in the anthropoids, the monkeys' narrower hand also favouring the process.

As 'psychic reverberations' from the arboreal life of man's anthropoid ancestor, Dr Quantz enumerates, among others, the following (516, p. 461): 1. Instinctive fear of snakes and certain wild animals (the serpent, *e.g.*, can climb trees). 2. Instinctive fear of lightning (some of this may be due to experience of ages past—lightning being more liable to strike a tree than an open space). 3. Fear of high winds and other weather disturbances (especially dangerous to tree-dwellers). 4. Instinctive fear of falling (in arboreal life climbing and falling were daily experiences). 5. Fear of strangers, 'hide and seek,' —these are of use in arboreal existence, where enemies are numerous and active. 6. 'Rocking to sleep' and the lullabies connected with it are reminiscent of 'long ages of swaying in the branches of trees, which would be the natural accompaniment of sleep, with creatures of arboreal habits.' 7. The extreme restlessness, spontaneity of movement, instinct for imitation, etc., of children resemble those of monkeys very much. 8. The physiognomy and actions of certain idiots and semi-idiots, 'very ape like.' 9. The widespread occurrence and persistence of 'tree-worship,' and the great *rôle* played by trees in religion, mythology, philosophy, art, etc., all over the world, and in the thoughts of children.

Atavisms of the Cave.—In his sketch of the 'Primitive Child' (541), Dr Louis Robinson seeks to explain many of the physical and mental peculiarities of the infant of to-day from the inheritance of trials and characteristics developed under the stress of the environment of primitive life. Among these are: The rotundity of outline almost universal in very young children—young monkeys had to be rather spare so that their mothers might carry them easily about the trees; the human child waxed fat in times of plenty, when food was abundant (so that when food was scarce and the parents grudged to their offspring the latter might live on), hence the voracity of the child (and its tendency to pick up everything and put it into the mouth—in earlier times the child had to get along with the *débris* of food on the floor of the cave and around the resting-places); infantile beauty, for in times of trouble and in flight the best-looking children would be snatched up and carried away; the 'astonishing vocal capabilities' of the modern infant, since it is a well-known fact that 'all young creatures, unless hungry, will remain silent for hours,' and, as

a matter of self-preservation, the infant human learned to cry and to howl, for purposes of food, and to prevent being overlooked. Moreover, in primitive times, the squealing of infants (like the barking of dogs to-day) contributed to vigilance on the part of the primitive community. Fear of strangers, terror of wild beasts, fear of the dark, jealousy (the primitive child had often a very hard time to get anything to eat), and many other peculiarities of the modern child had their origin in the facts and necessities of the environment of the earliest men—indeed, Dr Robinson holds that 'every trait, physical or moral,' of the young human being can be traced back to its forerunner in the offspring of cave-man, and his immediate successors or predecessors, a statement which is perhaps more of a truism than an exaggeration.

Interesting in connection with Robinson's views is Dr R. W. Shufeldt's account of the actions of a Navaho Indian child 'not over ten months old,' at Fort Wingate, New Mexico, whom he sought to photograph. The way in which the infant 'watched every movement,' without a cry, hid behind the sage-bushes, peered through the leafless twigs, crouched down, 'looked, for all the world, the young Indian cub at bay, with all the native instincts of his ancestors on the alert, and making use of all the stratagem his baby mind could master,' ran from bush to bush ('taking advantage of everything that lay in the short intervening distance'), and finally 'stood up to the full extent of its baby height, and giving vent to a genuine infantile bawl, made a break for the final point of its destination,' is very suggestive. Dr Shufeldt arrives at the conclusion that: 'The native instincts of these American Indians are exhibited in their young at a wonderfully tender age; and in this particular they differ vastly from our own children at a corresponding time of life, and, reared as they have been for ages, in a civilised environment' (592). We lack, however, reliable studies on this point.

Dr Frank Baker, in his vice-presidential address before the Anthropological Section of the American Association for the Advancement of Science, on 'The Ascent of Man,' enumerates some of the evidences of progress the body of man contains in itself, 'indications of the pathway by which humanity has climbed from darkness to light, from bestiality to civilisation, relics of countless ages of struggle, often fierce, bloody, and pitiless' (21, p. 299). Some few of the changes and variations incident to man's upward climb from quadruped to man are

indicated in the following table compiled from Professor Baker's data :—

Character.	In Fœtus, Child, etc.	Marked in	Least noticeable in	Other Remarks.
1. Torsion of the humerus	....	higher races of man	anthropoids and below them	less in Negro than in higher races
2. Obliquity of articular surfaces of the elbow-joint	does not occur in fœtus	higher races of man	anthropoids	less in Bushmen, Australians, than in higher races
3. Scapular index (breadth, length)	less in infant than in adult	highest in white races	anthropoids	less with Negroes and Australians than whites
4. Olecranic perforation	occurs in childhood, adolescence and adult age	prehistoric Arizona Indians; lower races of men	less in modern races of man	not confined to any one race; noted in animals using the forelimb much
5. Prehensile toes	....	East Asiatic peoples	white adults (except in case of early practice)	normal with anthropoids, etc.
6. Platycnemia (flattened tibia)	....	lower races	due to pull of muscle that turns the sole inward	more marked in some ancient human skeletons than in anthropoids
7. Spinal curve	up to fifth month a single dorsally directed curve	lumbar and cervical most marked in white races	higher apes	known to all races of men and the higher apes
8. Angle of inclination of great foramen of skull	....	most horizontal in white races	anthropoids	less in Negroes and lower races
9. Form of pelvis	infantile is more simian	more 'dish-like' in higher races	anthropoids	Lower races (Andamanese, Australians) more anthropoidal
10. Number of segments of backbone	at a certain period 36	in adult whites 33 or 34 vertebræ	Supernumerary segments more common in lower races, and apes	number greater generally in animals below man
11. Proportionate length of spinal cord to vertebral canal	in new-born child 85%	adult white 75%	greater in lower races	greater in animals below man

Some of the effects of the rearrangement of man's body and its organs consequent upon the assumption of the erect posture, as given by Baker, are grouped below :—

Vascular System.—Evidence of prior adaptation to quadrupedal position—(*a*) several great trunks (*e.g.*, great vessels of the thigh, forearm, ventral wall) are comparatively exposed. In an animal 'it is scarcely possible to injure a vessel of any great size without deeply penetrating the body, or passing quite through a limb'; this is because, 'by constant selection for enormous periods of time, the vessels have become located in the best protected situations'; (*b*) The vertical position of man does not, as does the horizontal, 'favour the easy flow of blood to the heart without too greatly accelerating it,'—the valves of the veins are arranged for a quadrupedal position.' As a result of the assumption of the vertical posture by man, we have, connected with his vascular system, congestion of the liver, cardiac dropsy, tendency to fainting or syncope with lessened heart-action, varicose veins, varicocele, hæmorrhoids, etc.

Viscera.—(*a*) The liver in man depends more and more from the diaphragm, not hanging suspended from the spine as in quadrupeds, and the diaphragmatic connections in man are such that the 'liver hangs in effect suspended from the top of the thorax and the base of the skull'; (*b*) the gall bladder in man and the urinary bladder are less advantageously situated for discharge; (*c*) in man the cœcum, with its vermiform appendix, is not, as in the quadrupeds, so placed 'that the action of gravity tends to free it from fœcal accumulations'; (*d*) the ascending colon is 'obliged to lift its contents against gravity' in man. As results of the assumption of the erect posture, we have here: Calculus and bladder diseases, appendicitis, torpidity (with a lowered state of the system) of function in the colon, gall-stones, restricted diaphragmatic and pulmonary action, imperfect æration of the blood, etc.

Pelvis.—(*a*) In quadrupeds the pelvis is suspended from the horizontal spine by means of a strong elastic suspensory bandage of fascia, the *tunica abdominalis*, of which in man the part near the thorax, being useless, has 'entirely disappeared,' while 'in the groin it remains to strengthen the weak points where structures pass out from the abdominal cavity'; (*b*) in the animals there is no such great distinction between the male and female pelvis as exists in the human being, for, in the

quadruped, 'the act of parturition is comparatively easy, the pelvis offering no serious hindrance,' while in the human female 'the shape of the pelvis is the result of a compromise between two forms—one for support, the other for ease in delivery'—thus the human pelvis has become more fixed and dish-like in shape, being most characteristic in woman, where it 'must bear the additional weight of the pregnant uterus.' As results of the assumption of the erect posture, we have here: Hernia, uterine displacement, etc., deaths in child-birth (the size of the head has gradually increased); woman has suffered from these peculiarities much more than man.

Muscular Anomalies. — The muscular anomalies of the human body—in the human fœtus and in the child at birth there are very many anomalies of this sort which have almost or completely disappeared in adult age—have been recently studied in great detail by Le Double and Testut. The latter holds that every abnormal disposition of muscle in man 'corresponds, perfectly or imperfectly, to a disposition which was normal somewhere in the zoological series'—the carnivora, the rodentia, the edentates, the didelphians, even the lower vertebrates, etc. Among other curious facts, Testut notes that feeble individuals with delicate muscles and bones seem to present about as many anomalies as those possessing a strong skeletal and a vigorous muscular system. Le Double, who does not hold the atavistic theory of Testut, distinguishes from the atavistic, regressive, or theromorphic anomalies, those that are progressive or evolutive, and those that are merely monstrosities or decidedly pathological. In man, the member or part most modified (the hand, as compared with the shoulder) appears to offer the most anomalies of muscular tissue. It is in the discussion of man's muscular system that the theory of atavism has been most misused. As Dr Frank Baker remarks (593, p. 127): 'When Sutton suggests that the round ligament of the hip-joint is a survival of an insertion of a muscle found only in the *lizards*, and Waldeyer considers that certain fibres of the ciliary muscle are vestiges of the Cramptonian muscle of *birds*, it seems to me that those eminent authorities forgot the extreme improbability of genetic continuation of structures between such widely different stocks, and through such innumerable generations, they having, nevertheless, totally disappeared in intervening forms.'

The Erect Position in the Animal Series.—Bipedal locomo-

tion is not man's unique possession, for birds have it, monkeys approach it, and some reptiles, on certain occasions, use it almost to perfection. What Mr Saville-Kent regards as a most interesting case of the cropping out in the young of ancestral traits is seen in the bipedal locomotion—more manifest in young and slender individuals — of certain Australian and African lizards, who run across wide expanses of level and smooth ground to the nearest water in bipedal fashion. This peculiarity, the author suggests, 'is inherited from a race that possessed yet more essentially bipedal progression.'[1] The bipedal progression of the Australian lizard, observed also by M. de Vis, has led Madame Clémence Royer to deny the generally accepted genealogy of man through some form of anthropoid ape, tracing man and the apes of to-day back to pelagic forms of parallel but distinct development. An original difference of attitude led to man's upright and the ape's oblique position, while neither man nor ape has passed through a line of terrestrial ancestors who used the horizontal position. Both the pedestrian motion of man and the arboreal life of the anthropoids are *sui generis*, and their common origins take us back to the movements and adaptations of sea-life. It must not be forgotten that the lizards noted by Mr Saville-Kent 'possess a relatively excessive development of the hind limbs,' and that the faculty of bipedal locomotion is most conspicuously present in the young and slender individuals'—here, again, the young, whatever may be the reason, is father of the old.

Bertaux, in his study of the humerus and the femur, concludes that the upper limb of man is no more typical than the lower, and the so-called torsion of the humerus is a phenomena of adaptation, that organ being not at all a 'turned' femur. He emphasises the fact that, while in the monkeys all four limbs are more or less adapted to prehension, in man the difference of the two pairs of limbs is complete—two for prehension and two for standing and walking. Bertaux rejects the simian origin of man, preferring to derive him from the Eocene mammifers—*Phenacodus primævus*—whose anterior members were adapted for prehension and sustentation, the posterior being suited to walking (51).

Man as Biped.—Sir William Turner, the eminent anatomist, after discussing in detail many of the technical questions involved, comes to the following conclusion concerning

[1] *Nature*, LVI. p. 271.

the erect attitude of man (653, p. 4): 'Characters and peculiarities which appertain not only to the family of which the individual is a member, but also to the species to which he belongs, are conveyed through it [germ] from one generation to another. Hence, as the capability of assuming the erect attitude and of thus standing and moving on two feet have been attributes of the human form since the beginning, there can be little doubt that this power is potential in the human organism at the time of birth, and only requires a further development of the nervous and muscular systems to become a reality, without the aid of any special training.' He also observes further, in deprecation of the idea that to the fostering care of mother or nurse is due the assumption of the erect attitude by the young child: 'If one could conceive an infant so circumstanced that, though duly provided with food fitted for its nutrition and growth, it should never receive any aid or instruction in its mode or progression, there can, I think, be little doubt that, when it had gained sufficient strength, it would, of itself, acquire the erect attitude. The great growth in length of the lower limbs, as compared with the upper, would render it inconvenient to retain the creeping or the quadrupedal position.' Somewhat the same view is taken by Professor E. A. Kirkpatrick,[1] who holds that 'movements such as walking, that seem to be learned, are, in reality, largely inherited, and that other nervous and muscular connections are less a matter of experience than is usually thought.' In support of his contention Professor Kirkpatrick cites the case of a seventeen months' old child, 'that had never tried to stand or walk alone, who, upon seeing some cuffs on a table, crawled to it, pulled herself up, put on the cuffs, then walked and ran all over the house.'

Origin of Erect Posture.—Dr Quantz (516, p. 455), citing Winwood Reade's statement that 'when the gorilla wishes to see more distinctly the approaching hunter, he rises to the upright position,' and noting the fact that not a few animals (*e.g.*, monkeys, rabbits, etc.) also stand up to look at distant objects, concludes that 'the erect posture has been brought about chiefly perhaps through curiosity.' Quantz holds, with Drummond, that the erect attitude is a comparatively recent acquisition of man, as is proved by his inability to maintain it comfortably for any great length of time, his desire to rest by

[1] *Psychol. Rev.*, VI. p. 153.

sitting, and his even yet somewhat unstable equilibrium, his inability to stand when sick, etc., and, further, by the fact of the child's having to learn to walk, a thing which other creatures do at once (516, p. 456). But, as the author notes, the 'bipedal balancing' is the difficult thing, for children make 'the alternate movements of the legs long before such a movement is of any service,' just as the arms of a child make alternate movements when gently stimulated on the palms—these, the movements necessary to quadrupedal locomotion, seem to be inherited, but the bipedal gait is acquired by practice of the individual, not having as yet become instinctive.

Baker, however, in his discussion of the evidence as to the nature and characteristics of 'Primitive Man' (22, p. 365), concludes, from consideration of the remains of the *Pithecanthropus erectus* (a creature believed to be a type intermediate between man and his anthropoidal ancestors), that in all probability 'the erect posture was assumed much earlier than is commonly supposed.' Further, he thinks: 'It must have preceded the intellectual development, and perhaps have been one of the conditions that led to it. It is not until the erect posture is assumed that the thoracic limbs are freed from the duty of assisting in locomotion, and thus become adapted to higher uses. No animal that habitually walked on its hands could acquire the use of tools.' In a sense the brain has been shaped by the activities of the body, and there is much truth in Dr Baker's observation: 'The infant does not learn to walk because its brain teaches it to do so, but by experience and trial its hands and feet teach its brain that this is a more effective method of locomotion; in this, as in so many other instances, the history of the infant recapitulates that of the race.'

The view that the oncoming of severe cold in the northern hemisphere changed some arboreal anthropoid into the precursor of man has been put forward by several writers. A glacial period of some sort figures conspicuously in the past environments of human and animal species, according to many authorities. Grant Allen, who holds that 'the tropics now preserve the general features and aspect of earlier times,' insists on the far-reaching effects of the ancient cold-wave.[1] Then it was that the trees learned to shed their leaves, the birds to migrate, the insects to hibernate in egg and cocoon, the pigs to fatten against the frozen time, the moles to sleep over winter, the squirrels to hoard nuts, the frogs to go into

[1] *Pop. Sci. Mo.*, Dec. 1898.

the warmer mud, the adders to coil up to sleep, etc. Man, however, he believes, is of 'pre-glacial' origin subsequent to the old 'frozen time.' Haacke would have it that after the origin of warm-blooded animals, through the transformation of some reptile or amphibian—the first step towards the mammal—a glacial period caused these to assume a hairy coat, which most of their descendants still retain (202, p. 10).

In his book on the origin and home of primitive man, Dr J. Müller adopts and extends Wagner's theory of the coming of man. According to these writers, the rise from animal to human life really took place in the northern part of the Old World during the Ice Age. The anthropoid ancestor of man, on account of the lack of plant and fruit food caused by the glacial cold, left the trees, took to the plains and began eating flesh. Gradually he learned to hunt, and his practice in hurling stones led ultimately to the assumption of the upright position and walking on the hind-limbs only. He was, however, helpless in many respects until he succeeded in manufacturing artificial weapons, which assured to him the conquest of the rest of the animal world. Some such theory as this seems also to be entertained by Keane.

Professor O. T. Mason, who has published a thorough-going study of 'Primitive Travel and Transportation,' observes that man is the only animal which 'has succeeded in divesting the fore-limbs altogether of their primary function,' and in providing 'in the erect position the diversified requisites for the versatile walker and burden-bearer in one person.' In a certain sense, we may say that 'the erect position was effected by and through the carrying art' (412, p. 255). Anyone who has watched the movements of a little child, before it has learned to walk, cannot fail to have noticed the delight it takes in moving, lifting, carrying things with its hands long before it has attained to anything like the erect posture. Methods of carrying, indeed, have much to do still with the exact character of the erect posture—women, *e.g.*, seem almost everywhere to prefer 'toting' or carrying on the head, men incline to the use of the shoulders or the back. Among some primitive peoples (certain North American Indian tribes in particular), the men preserve the upright figure and dignified bearing better than the women, who, through carrying children and numerous other heavy burdens, soon come to have the figure stooped and bent. But sometimes, on the other hand (among the

Quichés of Guatemala, for example) it is the men who relieve the back pressure by a band around the forehead, and by bending forward to contract the crouching posture, while the women have a dignified bearing and more erect position due to their carrying burdens on their heads and on the outstretched palm of the uplifted hand. These differing customs, we are told, begin in early childhood, and have an undoubted influence in shaping the figures of adult life (412, p. 477). Many of the most primitive methods and devices for carrying and transporting still exist in the midst of our modern culture as the nursery, the farm and garden, the docks and wharves, the streets and byways amply testify (412, p. 423). Children love to ride 'pick-a-back' as of old. Women persist in carrying their purses in their hands. The handkerchief slung on the end of the pole still met with in the pedlar and the tramp is age-old. The neck-yoke for carrying survives both in Old and New England, and the country boys and women use a hoop as a spreader when carrying two pails of water, while the two icemen in the great city who carry a huge block by both holding on the hooks and one pushing against the shoulder of the other for a brace likewise belong to primitive times. The waiter in our modern hotels who elevates the dishes he is carrying upon the palms of his hands had a fellow in Egypt thousands of years ago. The co-operative system of carrying in evidence at barn-raisings and picnics, shipyards and army manœuvres, funerals and accidents is very ancient. The passage of buckets of water from hand to hand at a fire still to be seen even in civilised English-speaking communities, the transport of fruit and other merchandise in like fashion in the Southern States, and all other endless chain methods of transportation, find congeners in Hawaii and among the ancient Picts. The Irish milkmaid who crowns her head with her kerchief or a cloth, before setting her pail upon it, is not far from the Zuñi Indian with her carrying-pad. The device of sitting down to aid in receiving or adjusting the load is a familiar one to many primitive peoples. The canoe (and with it the modern steamship), the coffin, the cradle, the box of the waggon and sleigh all bear to-day traces of their common parentage in the hollowed log, the primitive 'dug out,' which once served all these purposes. The 'stone boat' of the Middle and Eastern States finds its almost perfect fellow among the savage tribes of Siberia. The rude sleds of some

of our children to-day are matches for the simpler vehicles of many Arctic and sub-Arctic peoples.

Right and Left.—The assumption of the erect posture by man, according to Dr D. G. Brinton,[1] who remarks that 'the anthropoids and other primates closest to man are ambidextrous,' and that 'the aboriginal race of North America (and presumably other primitive peoples as well) was either left-handed or ambidextrous to a greater degree than the peoples of modern Europe' (among educated Americans and Europeans 2 to 4 per cent. are positively left-handed), entailed the preference for the right hand noted in all parts of the world from the remotest antiquity, the difference in the distribution of arterial blood to the left brain and the right, occasioned by the new attitude being the immediate cause. But this is only one of many views as to the origin of right-handedness. Professor Mason,[2] from the examination of stone scrapers, is led to conclude that '*quod sciam*, no savage woman was ever left-handed,' a fact which would set woman in advance of man in even the most primitive times. Right-handedness and left-handedness, however, may be only one aspect of the general field of asymmetry in man, however originated. Professor J. J. van Biervliet, indeed, in his essay 'The Right Man and the Left Man,' based on extended observations and a survey of the literature of asymmetry in the human subject, comes to the conclusion that 'the normal man is asymmetric,' and that there are 'two normal types of this asymmetry—skeleton, muscular system, nervous system, senses, functions, etc., are all affected—the right man and the left man.' In the case of the 'right man,' all the organs, etc., on the right side of the body are better developed than those on the left in the proportion of 10 to 9; with the 'left man' the case is *vice-versâ*. Many of these differences are slightly marked or do not occur at all in early childhood, not making their appearance till the age of fourteen or fifteen (52, p. 388), and the asymmetry in question seems not directly heritable. Occasionally there are cross-asymmetries.

Dr van Biervliet inclines to seek the origin of this asymmetry in the facts of embryonal life, the development of the vascular system especially. The 'famous asymmetry,' of the criminal, according to Dr van Biervliet, loses not a little of its importance in the light of the facts adduced by him, as

[1] *Amer. Anthr.*, IX. p. 181. [2] *Amer. Anthr.*, IX. p. 226.

do also many of the discussions of the 'atavistic' character of left-handedness, etc., for the normal 'left man,' while not nearly so numerous as the normal 'right man,' is remarkably frequent.

According to M. Irwell,[1] the vocal organs of man and the apes are so similar anatomically that some special cause must exist for the appearance of human speech. This, he thinks, is correlated with the erect position so characteristic of man, and with his breathing. Articulate language, its beauties and its blemishes came when man 'stood up.'

Hand-use—Manual Dexterity.—In the story of the use of the hand one may well recognise some parallelism between the development of the race and that of the individual. Good detailed studies of the use of the hands in the various activities of primitive peoples are rare, for there are as yet few Cushings, McGuires and other patient investigators of savage and barbarous life.

Mr F. H. Cushing, in his interesting account of the arrow and the activities connected with it, observes: 'There are three examples of the way in which awkward-handed, experienceless-minded beings began making (or, rather, using) things as tools. They are to be found in the acts of monkeys, imbeciles, or very young children. I have watched and experimented with all three studiously and long. If they would break a thing, they cannot—or at least they never do—dissociate the thing to be broken from the breaking of it. They hit it against something bigger.' Even the Tasmanians, Mr Cushing points out, though far above the monkey's or the infant's stage of art, 'still practised edging their hard pebble-choppers by seizing them with both hands, the more accurately to direct them, and whacking them until chipped sharp obliquely against other stones, and in this they were, but a few generations ago, in the true Palæolithic period of their development.' It marked a mighty advance in the intelligent activity of man when he changed from a mere user of tools to a maker of them—when the idea came to him to use the tool on he object, not the object upon the tool. The way of perfectibility was then opened for the tool and for all actions connected therewith. From the nut clasped in the hand and struck against the boulder to the implement fashioned to best suit the hand, and best break, split, cut or round the object against which it was employed,

[1] *Med. Rec.*, N.Y., p. 87.

was a step that marked the victory of intent over opportunity, of art over materialism of the rudest sort.

Mr Cushing tells us further: 'There are three contemporary examples of the early use of a prod as a weapon—of at least the chase. These are: Bobby [monkey] again, young children, and (I say it not gracelessly) women trying to drive chickens or cattle or other frightful creatures.' The monkey tries to hit the cat, *e.g.*, with a stick, 'never by actually throwing it, but by lurching it forward with both hands, and as much with the body as with the hands and arms.' Moreover, says Mr Cushing, 'if you ever see awkward women or children after anything with a "sharp stick," you will observe that they throw it, if they cannot catch up, in much the same fashion—lurchingly, not overhand, as a spear should be thrown, for that would discontinue the initial movement' (139, p. 328).

The epithet 'two-handed,' which the present writer remembers from childhood as a synonym for 'awkward,' finds some explanation in these primitive *modi operandi*. Talbot says of a family reported by Gibney (625, p. 55): 'All' [five] 'of the children and the grandchild are semi-ambidextrous to an annoying degree; all of the movements which they perform with one hand are simultaneously performed with the other hand. The girls are obliged to use only one hand when dressing themselves, or when cutting patterns, and hold the other hand down by their side, because the two hands perform the same movements at the same time, and would interfere with each other.' There are other data of similar import, and an interesting essay might be written on the awkward ambidexterity of human individuals.

Mr J. D. McGuire, the author of several excellent studies of the arts of primitive peoples, controlled by experimental investigations, observes that it is only in rare instances that a long period of time could be devoted by savages under the stress of the exigencies of life to the completion of any article intended only for luxury or adornment, and that 'it is a safe rule to assume that no savage instrument ever required any considerable time to complete' (388, p. 670). The chief thing was to begin in the right way. Mr McGuire holds strongly the view that primitive implements and primitive artefacts were produced by primitive methods, and not by means of any wonderful 'lost arts' and contrivances beyond the comprehension and skill of man to-day: 'If the tusks, teeth and "bâtons of command"

of the caves' [due to Quaternary man of the Palæolithic period in Western Europe] 'are of the pure Stone Age, as they undoubtedly appear to be, one may argue safely that primitive implements were employed in making them, unless it can be shown that primitive methods would not accomplish the work' (388, p. 626). Experimental research enables the author to state further: 'The habit of attributing great patience and indomitable will to savages who have performed some work which does not at first sight appear explicable by simple methods is due rather to poetic fancy than to a willingness to admit ignorance.'

Most interesting in this connection is Mr F. H. Cushing's account of his discovery of arrow-making; how as a boy of about fourteen he had experimentally learned how the Indian arrowheads and the implements employed in fashioning them were made and used, and 'had elaborated, from the simple beginning I have chronicled here, some seven or eight totally distinct methods of working flint-like substances with Stone Age apparatus, and subsequently found that all save two of these processes were absolutely similar to processes now known to have been some time in vogue with one people or another of the ancient world, and I confidently look to finding that the other two, and yet additional methods since experimentally made out, were somewhere followed by men before me' (139, p. 313). Mr Cushing's success (by reason of which he became an archæologist and subsequently was called to the Smithsonian Institution at Washington) seems to indicate that the unaided efforts of children, rather than their parent or teacher-guided labours, are the lines in which the earlier achievements of the race are more liable to be repeated.

Mr Walter Hough, who has investigated experimentally methods of fire-making,[1] observes: 'There is a prevalent belief that to make fire by friction of two sticks' [presumably the first fire-apparatus] 'is very difficult. Such is not the case. The writer can make fire in ten seconds with the twirling-sticks, and in five seconds with the bow-drill. Captain John G. Bourke, U.S.A., furnishes corroborative testimony on this point, to the effect that the Apache can generate fire in less than eight seconds. Most tribes make fire on wood in less than two minutes; if a longer time is consumed it is probable that the

[1] *Amer. Anthrop.*, III. p. 361.

people under observation are not properly prepared, or are practising a waning art.'

The Handless and Limbless.—Man really astonishes his fellows sometimes by what he is able to accomplish when he possesses a human brain, but lacks one or more of the physical accompaniments of perfect manhood or womanhood. Man can come very near to being a monster, and yet live and move and have his being.

To the young of man and other mammifers who are born with such teratological characters as give them a position intermediate between malformations and real monsters, Broca gives the name ectromelian (ἐκρώω, 'I cause to abort,' and μέλος, 'member'). Though the greater part of such beings are not destined to adult life, there is no doubt that, unlike 'monsters,' these ectromelians are perfectly viable, possess often a robust constitution, are fecund after their kind, and often attain to advanced old age. In ectromelians the shoulder and the pelvis, the two characteristic regions of the trunk-ends of the body, are most often nearly normal in their development, the malformation affecting only the free or exterior portions of the members. Sometimes the hand or the foot seems to be attached directly to the shoulder or pelvis, a condition of affairs recalling the seals (whence the term phocomelian), whales, moles, etc.; in other cases the lower segments of the limbs are lacking almost entirely, being reduced often to mere round stumps (to these cases the name hemimelian, 'half-membered,' has been applied); again, the abnormality of conformation may affect both segments of the limbs at the same time, reducing the members to mere appendices of the shoulder and pelvis—the complete type of ectromelians (82, p. 198).

While 'monsters' die very shortly after birth, ectromelian infants (exempt in the majority of cases from serious anomalies of the trunk, and, especially, of the face) are strong and healthy: 'In respect to intelligence, general health and strength of the muscles which they possess, they yield in nothing to individuals whose members are perfectly developed.' Those whose hands and feet are not entirely lacking acquire a surprising facility of movement by means of the stumps which nature has left them. Those armless and handless use their feet as organs of touch and prehension, and often reach great skill in the employment of a needle, a pen, or a painter's brush. Ketel, according to Camper, painted with his foot, and Ducornet, 'born without

arms,' as he was surnamed, attained a high rank among the artists of Paris in the present century. Thomas Schweicker, although he was armless, 'cut his pen, wrote, drew and carved with his foot,' and Ledgewood (exhibited before the Anatomical Society by Broca in 1852), who had no other organ of prehension than a four-toed foot, could 'clothe himself, shave, write, load and fire a pistol, pick up a pin from the floor, etc.' Moreover, he was able to scratch his head with his foot, and by placing a thread between his lips, could, unaided, thread a needle. To the ectromelians who are entirely limbless the mouth comes to be wonderfully serviceable, the teeth and the lips recovering, perhaps, some of their ancient skill and cunning in prehension and retention.

According to Broca, abortion of the thoracic members does not at all affect the genital organs, the phocomele Duval (19 years old), *e.g.*, possessing perfectly developed genitals. Ledgewood married, and his wife gave birth to a robust and perfectly well-formed boy. There seems to be, indeed, no direct proof of ectromelian heredity in man, which is in line with the general law that anomalies are less liable to be transmitted by heredity (direct or collateral), the more serious they are—anomalies of the limbs, *e.g.*, as compared with anomalies of the fingers and toes.

The complete or almost complete abortion of the abdominal members is, however, usually accompanied by an arrest of development of the testicles, which, remaining in the abdomen, do not produce spermatozoids; though when only one of these members is affected by ectromely the descent of the testicles takes place regularly.

Prehensile Foot.—At the other end of the scale from the ectromelians are those geniuses of the Terpsichorean art, whose hands and feet seem everywhere at once—those ancient ambassadors who expressed their message, as do to-day certain primitive peoples, by the dance, and not by oral or written speech. Here belong also the prehensile-toed Negroes, Chinese, Japanese, and other Eastern Asiatics, who—especially the trained gymnasts and others—perform wonders with their feet. As Carrara and Ottolenghi have shown, the greater space between the first and second toes, the power of separating them, and certain degrees of prehensility, are more marked in normal women than in normal men, while criminals, prostitutes, idiots, epileptics and other

degenerates approach even more closely the condition present in the feet of the prehensile-toed among the lower races of man. Baker says (21, p. 305): 'It is quite possible to train the toes to do a certain kind of prehensile work, even to write, cut paper, and sew. A baby not yet able to walk can often pick up small objects with its toes.' If one compares 'the marks caused by muscular action on the sole of a baby's foot with those on the hand,' one will find 'distinct signs' of this prehensility. These phenomena have been more recently discussed by Dr Robinson in his article on 'The Meanings of a Baby's Footprint,' in which many interesting facts are brought out, and comparisons made. The *rôle* of practice and training in prehensility is emphasised by Dr Quantz after Virchow (516, p. 454).

In a sense, however, all civilised men, at least, are ectromelians, as the result of what has been termed 'supplementary organs of sense,' 'extra-organic evolution,' etc.

Extra-Organic Evolution.—In the course of an interesting essay on 'Discontinuities in Nature's Methods,' Mr H. H. Bates, emphasising the substitution of psychical for physical evolution which has taken place in man, says: 'Modern locomotion is a true discontinuity in natural phenomena, judged by its results.' The plesiosaur and the dinosaur, the great ravagers of the sea and roamers of the earth, moving by their own immediate exertions, are gone, and man, in the steamer's cabin or the Pullman car, traverses the globe. Moreover, 'man does not *inhabit* them, as the hermit crab inhabits his foreign shell. He uses them, parasitically, as a means of locomotion.' From the fishes' tail and the birds' wing to the wheel, man's creation, is a great leap (41, p. 140).

Drummond, in his *Ascent of Man*, has told in rather exaggerated fashion 'the forfeit man has had to pay for his taming'—the way in which civilisation with axe and club in the beginning, and nowadays with spectacles, telescopes, microscopes, cameras, telegraphs, telephones, instruments and vehicles of all sorts, has 'supplemented the senses,' and sealed the doom of the further development of certain limbs and organs of the body. The real evolution of these human attributes to-day lies in their progress from the uselessness and weakness of the child to the functional use in men and women. Individual psychic and social factors are now more

powerful than race-influences and the species-instinct once were. It is not now a case of an active young monkey climbing manward, but of a helpless little human reaching up into the fulness of human action and human thought. The dullest, weakest babe is, altogether, much more of a human being than is the brightest, strongest little monkey—they are akin, but not the same—and the child of civilised man is slowly but surely becoming, also, less of a savage with the lapse of years.

'Expansion' rather than 'degeneration' is, perhaps, the right word here. Mr Drummond's suggestive remarks are enlarged upon by Dr Arthur Allin, in his paper on 'Extra-Organic Evolution and Education,' and Professor Baldwin, in his *Child and the Race*, emphasises the tendency to inherit the social *milieu* and disposition thus constituted, while other more recent essays, like those of Papillault, give full weight to the social shaping of the organs themselves. As Bates observes, 'the creative brain of man' has introduced 'a new mode of structure and function, of utilising a planet' (41, p. 139), and the social mind of man, it might be added, has gone on improving and perfecting it.

Fœtal Attitudes.—Forster, in his *Life of Dickens*, records Dickens's impressions of a girl of ten, who was born deaf, dumb and blind: 'The moment she is left alone (or freed from anybody's touch, which is the same thing to her) she instantly crouches down with her hand up to her ears, in exactly the position of a child before its birth. I thought this such a strange coincidence with the utter want of advancement in her moral being, that it made a great impression on me; and, conning it over, I began to think that this is surely the invariable action of savages too.' This 'fœtal' position is, curiously enough, common in women under certain conditions. During the menstrual period young women, when not restrained by the etiquette of company, frequently adopt practically this posture. Dr Frank Baker also informs us that in uterine displacement (hardly known among quadrupeds), 'one of the most effective postures for treating and restoring to place the diseased organ is the so-called "knee-elbow" position, decidedly quadrupedal in character' (21, p. 311). in which the body is supported on the elbows and knees. Havelock Ellis (183, p. 66) notes the 'numerous and marked advantages of this posture in the diseases of women,' as introduced by

Marion Sims, whose discovery of this posture has been described as 'the turning-point in the history of gynæcology.'

The posture assumed by women just before childbirth is also of interest in this connection, the position, as can be seen from figures in the second volume of Ploss being often the fœtal one (as far as practical) among primitive peoples. This posture is very frequently represented in primitive art. But, as may be seen from the historical study of Morgoulief (436), the position taken by the woman during childbirth varied in ancient times as much perhaps as to-day—lying, crouching, standing, sitting, are all modes of remote antiquity. Another posture, often evidencing atavistic peculiarities, is that assumed by the sexes when urinating (183, p. 61). A quadruped-like form of *coïtus* is said by some authorities to be found not infrequently among the lower races of man (*e.g.*, in certain parts of Australia, Africa, etc.).

That in sleep man tends to assume atavistic attitudes and postures is indicated by not a few facts. Not merely mentally, but physically also, man is in a 'reduced' state when asleep, practically in some respects a savage, or an anthropoid. These topics have been exhaustively treated by Mme. de Manacéïne in her work on *Sleep, its Physiology, Pathology, Hygiene, and Psychology*. Baldwin (23, 5), notes also the 'reversion to the child-type occasioned by hypnotism,' which sometimes involves attitudes and postures. Quantz again (463) remarks that: 'The sleep of children shows physiological tendencies which suggest certain ancestral modes of life. Young children when left to themselves will naturally go to sleep on their stomachs, with their limbs curled under them, or often using one arm as a pillow, which is exactly the position adopted by orangs and chimpanzees.' West Indian mothers and nurses, we are told, lay children down in this way, and, as Robinson has remarked, 'some savage tribes sleep with the head bent down upon the knees, just as monkeys do.'

Dr William Browning[1] remarks concerning a gifted colleague, that he 'sleeps on his belly, but with the forehead resting on one arm.' The physician in question 'alleges that he thus imitates primitive man, since our wandering ancestors must usually have lacked pillows, and so have eked out a headrest with the arm.' Some people also 'sleep on the belly with the face turned to one side.' Dr Browning in-

[1] *N. Y. Med. Jour.*, LXIX. p. 636.

forms us that the type of those who sleep with the head lower than the usual average is 'naturally more frequent in the sick.'

The 'chin-knees' position is a favourite one in the disposition of the dead among primitive peoples, although in some cases it may have been determined by the nature of the receptacle for the corpse. Savage and barbarian prepare man for entrance into the next world by arranging him much as he was before he entered this.

Postures in Fatigue and Excitement.—Fatigue, as Tissié notes, sometimes induces atavistic attitudes and positions, so the tired individual of the higher race is often physically on a par with the individual of the lower. Fatigue, like age, mimics the past history of the individual and of the race. Excitement and emotion are also promoters of atavistic body actions, as the studies of the automatisms of actors, preachers, orators, etc., prove, while the higher mental processes among civilised individuals are often accompanied by unconscious, or semi-conscious automatisms of a physical or a physiological nature, once the regular companions of the less developed forms of such mental activities. Doctors Lindley and Partridge, in their study of 'Some Mental Automatisms,' suggest that the avoiding, or careful stepping on cracks, planks, etc., in platforms, floors, board walks, carpet-seams, shadows of electric light, bars of sunlight, gravel stones, water-ways, vacant places, door sills, registers, bricks, tiles, knots, furrows, nail-heads, etc., so common in children and by no means rare even in adults, may be 'the remnants of an ancestral foot-consciousness, once an important part of the psychic life, but now shrivelled up to insignificant proportions,' and not merely 'associations built up in childhood by imitation, added to by folk-lore and games,' etc. (361, p. 52). The foot is not so much the 'wegweiser' with us as it was with our ancestors, and even the extreme sensitiveness of the palms of the hand, no less than that of the soles of the feet in man to-day, tells one story of the struggle for existence. To be 'foot-sure' was to survive, and keenness of foot, no less than fleetness of limb, won the day. The foot-play of children before they enter the water when swimming may also belong here with many other surviving 'feels' of hands and feet. Nor far removed, perhaps, is the 'insane desire' to touch everything. In the excitement of their contortions and dances, we are

told (516, p. 465), 'the medicine-men and sorcerers among primitive people assume many ape-like attitudes'; indeed, religious ecstasy and the fervour of the dance originate similar phenomena all over the world, as the history of the saints and fakirs in all countries and all ages proves. And, quite at the other end of the scale, the modern systems of gymnastics have their atavisms, against which eminent authorities have protested.

In his *Physical Education of Youth* (444, p. 150), Dr Angelo Mosso cites, somewhat approvingly, Lagrange's designation of the German system as 'monkey gymnastics,' in protest against its employment of apparatus which compelled man to leave the ground and support the weight of the body with the arms. The great difference between the brain of man and that of the anthropoids ought to be our warrant against the routine-teaching of ape-like attitudes. Man has, indeed, no call to insure bodily and mental health by turning monkey.

Much that is interesting concerning the relative verticality of the individual at various stages of his existence, of the sexes, races, social classes, etc., may be read in G. Delaunay's comparative biological studies (154, p. 47). Havelock Ellis, who cites Delaunay, says (183, p. 59): 'The apes are but imperfect bipeds, with tendencies towards the quadrupedal attitude; the human infant is as imperfect a biped as the ape; savage races do not stand so erect as civilised races. Country people (even apart, according to Delaunay, from agricultural labour) tend to bend forward, and the aristocrat is more erect than the plebeian. In this respect women appear to be nearer to the infantile condition than men.' This holds, perhaps, even of quite primitive races. The degenerate, insane and criminal classes offer sometimes evidence of less humanness with respect to the erect attitude, but care is needed in this field.

Many attitudes characteristic of apathetic states are, according to Féré,[1] due merely to muscular weaknesses (though similar phenomena are sometimes present in the chimpanzee and other anthropoids), and cannot be considered atavisms, a view shared also by Näcke. Muscular virility may in like manner be justly held to account for some attitudes characteristic of activity, which have also been considered atavistic.

[1] *Rev. de Méd.*, 1896.

Swimming.—Did one not recollect the common jest at the expense of the sailor to-day, it would seem incredible that there should exist on the globe tribes of men ignorant altogether of the art of swimming. Yet we are told, 'it was the reproach of the Choctaws, living on the Mississippi River, that they could not swim,' and Dr D. G. Brinton says of the Tapuyas, a very primitive people of Brazil, that 'they manufacture no pottery, build no canoes, and do not know how to swim' (75, p. 238).

According to Dr Hyades, of the French scientific mission to Cape Horn,[1] it is a curious fact that the Fuegian men around Cape Horn cannot swim, although they pass a large part of their time in their pirogues; but their women there, and everywhere on the coast, are skilled swimmers. They swim nearly as dogs do. The consequence is, that when a pirogue upsets—a rather common accident—the men are frequently drowned, while the women swim ashore. No explanation of this condition of things could be obtained, though one sarcastic Fuegian told Dr Hyades that only the women could swim, as they alone had breasts which would float them in the water. It may be, however, that here Nature is really aiding the fittest to survive.

Dr Fritjof Nansen, in his sketches of Eskimo life, declares that reading and writing have been introduced among these people 'at the expense of skill in managing the *kayak* (the characteristic Eskimo boat),' the number of deaths from drowning having largely increased since the introduction of the school and the church. It is often dangerous to attempt to teach an old race new tricks. In ancient Athens, however, children were taught to read and to swim, as two of the prime arts of social life, the lack of which relegated the individual to the lowest ranks (357, p. 436).

With many savage and barbarous peoples all over the world children of both sexes learn to swim well at a very early age. The Andamanese boys and girls are very good swimmers, learning almost as soon as they can run; so also some of the Kootenay and other Indians of North America, who are very fond of the water. The Siouan Indians, according to Dr W. J. McGee,[2] were, for the most part, 'fine swim-

[1] Hyades and Deniker's *Mission Scientifique du Cap Horn*, Vol. VII. p. 214.

[2] *Ann. Rep. Bur. Ethn.*, XV. p. 172.

mers—men, women and children'—although they 'did not compare well with neighbouring tribes as makers and managers of water-craft.' Even among primitive peoples the best navigators are not always (perhaps not commonly) the best swimmers. The natives of Tahiti, and other islands in the South Pacific, 'are fond of the water, and lose all dread of it before they are old enough to know the danger.'

Sir David Wedderburn[1] thus describes the bathing of the Maoris of New Zealand, 'a nation of perfect swimmers, the women no less than the men,' in the warm springs of the country: 'At sunset the whole population of a village, men, women and children, may be seen disporting themselves in the tepid depths, or seated, with the water up to their necks, on the smooth, enamelled sides of these natural thermæ. Infants in arms bathe along with the rest, learning to swim before they are able to walk.' We learn also that in the Maori legend, corresponding to the classic tale of Hero and Leander, it is the woman 'who performs the feat of swimming over to the island of Mokoia.'

The inability of man, as compared with the quadrupeds, to swim naturally and instinctively without previous training or effort, is a fact which Robinson, in his essay on 'Darwinism and Swimming,' seeks to account for from the arboreal life of the ape-like ancestors of the race, and Quantz, who has investigated the 'dendro-psychoses' of the present sons and daughters of mankind, expresses the general opinion that 'the higher apes' dread of water and the loss of their ability to swim are no doubt the result of their life being exclusively arboreal' (516, p. 456).

Mr Irwell points out that in trying to swim in deep water man moves one hand after the other, which he ought not to do, but which is just what apes do in climbing trees. Some primitive peoples, like children, go even further back, and swim 'dog-fashion.'[2] As Professor O. T. Mason points out, most of the devices used by children nowadays as aids to swimming have been exploited by savage and barbarous peoples (411, p. 333). The Indians of Labrador 'use little paddles to drag themselves quickly through the water'; Mexican, Peruvian and other tribes 'tie bundles of reeds together as floats'; some of the

[1] *Ftn. Rev.*, XXVII. p. 801.
[2] *Med. Rec.*, N.Y., LIV. p. 86.

Indians on the Gulf of California 'lash two light bits of wood to a vine, which they place against the breasts, exactly after the manner of the cork life-preservers'; while Shakespeare's 'little wanton boys that swim on bladders' compare with the Assyrians of old, who 'buoyed themselves upon inflated goatskins,' and the Eastern Eskimo, who 'at times ride on the sealskin harpoon-floats.'

Psychic Atavisms.—'Psychic Atavisms'—regressive phenomena of thought, feeling and action, considered apart from physical or anatomical atavisms—is the title of an extended essay by Professor Paolo Mantegazza, published in 1888, and the literature of this topic has increased vastly since then. By 'psychic atavisms' (not necessarily teratological or pathological) the author means 'the sudden return in individuals of the higher races of man of psychic characteristics which properly belong to his savage, anthropomorphic or animal ancestors.' Such regressive mental phenomena may occur in at least two different ways, viz.—(*a*) by reason of a standstill of psychic development at the child-stage; (*b*) by reason of the reappearance of atavistic qualities, which have skipped a number of generations, the appearance in an individual of qualities which for long years have been latent in the stock to which he belongs, but clearly characterise some of his more remote ancestors. Mantegazza accepts the view that the mental development of man, from childhood to adult age, runs through briefly the same stages which the race has gone through in the course of its development. For him the Australian aborigine represents man of the river-drift period, and is a creature 'with the intelligence and the feelings of a European child of to-day,' the only difference being that the savage adult remains fixed in the same stage of development, while the civilised child is capable of making psychical progress—a view not entirely justified by the more recent and searching studies of primitive tribes. The second form of psychic atavism is exemplified when children, whose parents are of opposite characters, manifest qualities altogether different from those of their immediate progenitors, but closely resembling, or even identical with, peculiarities of ancestors much more remote,—this Mantegazza compares with the appearance of the blue feathers of the wild pigeon in the offspring of doves of differently-coloured plumage and of different race. Some of the principal

'psychic atavisms' noted by Mantegazza and others are as follows:—

Alimentary Atavisms.—Alimentary atavisms appear, *par excellence*, in the little child of the modern civilised races, who is vegetarian in his early years, delighting in all sorts of plants and leaves, fruits and berries, things sweet and sour; it is only during youth that the individual man becomes carnivorous (in which state he continues through adult age). Not alone the predilection of the child for the products of the vegetable kingdom, but the efforts of parents to keep meat away from their young offspring, recall the fact that in the childhood of the race man was frugivorous, as many of the lowest known primitive tribes are still to-day. The predilection of all peoples, low and high, civilised and savage, for oysters and other mollusks in their raw state, may be termed a universal atavism, which records the fact that the race enjoyed a diet of raw, uncooked flesh before the invention of fire and the gradual rise of gentler instincts made the art of cooking possible. The influences of modern civilisation are, however, rapidly creating in the child of to-day appetites for cooked and preserved meats, which do much to off-set the inherited tendencies towards vegetarianism.

Mrs Bergen's studies in the folk-lore of New England and her investigations of the popular names of American plants contain much information concerning the food of a vegetable character, which children, like primitive peoples, seek out for themselves in the meadow and the forest The range of these vegetable foods is very great. The following list made up from Mrs Bergen's papers contains indeed but a few of them, for their name is really 'legion' (leaves, roots, stalks, fruits, berries):—

Smilax rotundifolia; the young leaves, which are eaten, are called in certain parts of Massachusetts 'biscuit-leaves,' 'bread and butter.'

Claytonia perfoliata, called in parts of California 'wild lettuce,' and eaten as lettuce.

Saxifraga mertensiana, called in Southern California 'cocoa-nuts,' the bulbs being dug up and eaten.

Brodiæa capitata, hog-onion—'the corm tastes like elm-bark.'

Stretopus roseus—'the cathartic fruit freely eaten.'

Cyperus strigosus, called, at Concord, Mass., 'nut-grass,' the tubers being eaten.

Podophyllum peltatum, called in Iowa 'hog-apple'—the mawkish fruit is eaten.

Astragalus mexicanus, called, in South-Western Missouri, 'prairie apple'—the fruit is eaten.

Azalea nudiflora, the insipid gall-excrescences, called 'swamp-apples,' are eaten, like oak-galls.

Acorus calamus (sweet flag)—'the great buds are considered a delicacy,' while 'sometimes the boys pull up the leaves or blades of the calamus, and eat the white substance at the base.'

Apios tuberosa (pig-nut)—the fleshy tubers are dug up and eaten.

Other vegetable foods, exclusive, of course, of acorns and nuts, are the leaves and young sprouts of the 'checker-berry,' the bark of the black-birch, the bark and young buds of the sassafras and the 'spice-bush,' the tender young leaves of the beech, and many more.

Apple-stealing and apple-nibbling, so common in boys (and often girls as well) of all civilised races, have been made much of by the evolutionistic philosophers as heirlooms from the animal ancestors of man. Schneider, who has written the story of the human and the animal will, observes: 'Remarkably constant and obstinate is the inheritance of the instinct for apple-stealing and apple-nibbling which manifests itself so strongly in boyhood. Although for generations past the apple has been only an accessory food, and education has been working against this predilection of youth for plundering orchards, the sight of the fruit arouses in the young human being still such a strong desire and so great an appetite that the instinct often overcomes all notions of danger, even when the apple is still green and unpalatable. And who is there who does not remember in adult age the great pleasure which, as a boy, he had in scaling his neighbour's fence and filling his pockets with apples? There is no other food the sight of which awakes in youth so strong a desire as does the apple, and we are led to conclude therefrom that our animal or savage human ancestors must have been especially given to eating apples, a view that gains support from the fact that, with primitive peoples,

as with monkeys, the apple is a chief article of food' (613, I. p. 70).

Steinmetz, however, who cites the opinion of Schneider, believes that too much has been made of the idea of 'appetite,' and that the phenomena in question are capable of other explanations, and may arise from love of adventure, exercise of power, etc. Moreover, must we explain the child's liking for the lime in confectionery from the clay-eating propensities of certain savage peoples? How are we to account for the child's early antipathy to meat, when so many primitive races have been carnivorous for ages, or how explain the rarity of anthropophagic phenomena in childhood? And why should the child like sweet-things, sugar, candy, etc., as much as he does apples, or even before them? How are we to explain the presence in the boy at the same time of a frugivorous and a bellicose instinct? It has often been said that fruit-eating primitive peoples are less belligerent than those who are carnivorous. As Tarde well says: 'If the ancestor of man was frugivorous—that is to say, a gentle animal, full of tenderness towards his fellows, as are the most of the apes, it is not war or murder that we must think of explaining by atavism, but rather family life and the development of patriarchal virtues.'[1]

Keane, who holds that when the precursor of man was 'driven by the increasing cold of the first Ice Age from arboreal habits to a nomad life on the plains he readily acquired omnivorous tastes'—man in the 'eolithic' stage was 'mainly frugivorous'—calls attention to the fact that the higher apes are not, as is commonly supposed, exclusively herbivorous in their wild state, but are also 'insectivorous and carnivorous, eating vermin, eggs, small rodents and birds greedily' (322, p. 111).

Dirt Atavisms.—'Dirt' or 'filth atavisms' are represented by the kneading and modelling of one's own excrement, a practice often observed in monkeys and in children belonging to the races of highest culture and social development, and not unknown among even educated adults, for the field of pornomania is indeed a wide one; also by like procedures with other dirt and filth. Many facts of value in the comparative study of 'filth atavisms' are to be found in Captain J. G. Bourke's learned and exhaustive work on *Scatologic Rites.*

[1] *Philos. Pénale*, p. 6.

Mimetic Atavisms.—Muscular or mimetic atavisms are also best seen in the child, whose motions and bodily activities are full of regressive characteristics—biting, scratching and clawing, poking and handling, nibbling and biting grass, stalks of plants, etc., balancing and rocking about, shuffling about in the dry leaves on the ground, heaping up wet sand with the feet, lying at full length on the green turf, climbing trees, paddling in brooks and streams—all acts of which adults are much more often guilty than is commonly supposed. The delight the child takes in rolling about on the green, soft, elastic earth is common to monkeys and to men. It is said that the natives of the Argentine Republic who have sojourned for a long time in the desert highlands of Bolivia, when they return to the rich and blooming meadows of their own country, leap and spring and roll about as do the colts and horses. The pleasure that the ordinary boy takes in kicking along a piece of wood or any other small object that may lie across the sidewalk or the path on which he is going is equalled only by the subsequently developing passion for football. The child's attempts to throw with the foot a piece of wood, etc., placed across the toes finds a parallel in the 'stick-kicking' race of the Zuñi Indians as described by Mr F. W. Hodge, a *foot*-race to which these aborigines are passionately devoted. 'Considering the extreme lightness of the race-stick,' says Mr Hodge, 'the distance which it is sent by a single kick, or rather toss, with the toes is remarkable. Very often a stick is raised aloft in this manner about thirty feet and falls at least a hundred feet from the point at which it was lifted.' For such races training begins very early: 'At almost any time a naked youngster of four or five years may be seen playing at kicking the stick outside the door of his own home, or, if a year or two older, coming from the cornfield—where he has been dutifully engaged in frightening off the crows—tossing the stick as far as his little feet will allow him.' The little boys also have their own match-races. [1]

Genital Atavisms. — Genital atavisms are represented alike by the 'love-bites' and other exaggerated kisses and caresses which the infatuated of both sexes lavish upon each other, and in many of the strange and bestial love-expressions, which sometimes bring man down to even a lower level than that on which the brute stands, though many of these

[1] *Amer. Anthr.*, III. p. 231.

phenomena of the latter sort are to be accounted pathological or disease products. 'I could eat you,' still says many a man or woman when kissing the beloved, and, according to M. Paul d'Enjoy, (192), the utterance is very significant. The 'love-bites' which figure so prominently in Germany and England among the uneducated classes, in the days of engagement and during the honeymoon, are but evidences of the cannibalistic origin of kissing. M. d'Enjoy tells us that there are two kinds of kissing, the 'suction or suckle kiss' of the white race, and the 'smell or sniff kiss' of the Chinese and certain other Mongolian peoples. The gestures and other movements accompanying both the 'white kiss' and the 'yellow kiss' are such as to indicate that they spring from the idea of cannibalistic self-preservation, and recall the scents, sniffs, smells, smacks and bites of the beast of prey at its victim. In the case of the Mongolian the 'smell of the prey is still pleasant,' in the case of the European there lingers yet some shadow of the actual cannibalistic act. When the lover declares his readiness to eat the beloved out of sheer love he has unconsciously retraced æons of the history of animal life in the world. It is significant, in this connection, that with some primitive peoples kisses are only bestowed upon infants, and the mother's art of 'kissing the hurts and bruises of her child to make them well' may not be all pure affection; so likewise the Mingrelian custom in accordance with which young maidens obtain for themselves protectors by having youths bite at their breasts symbolically (107, p. 217).

Another aspect of genital atavisms must be read of the ever-growing literature of sexual perversion, love-fetishism, prostitution male and female, onanism, phallicism, etc., represented by the recent works of Krafft-Ebing, Moll, Havelock Ellis, etc.

Cruelty Atavisms.—Atavisms of cruelty embrace a large category of peculiarities which are really relics of the cruelty and vindictiveness of our forefathers, so many of which fierce traits constantly recur in war and the chase; hunting and soldiering are both but cruelty-professions in more or less civilised garb—'killing is still noble, though the fashion of it has changed.' Civilisation to-day permits cannons, but forbids poisoned arrows, allows a city to be laid in ashes, but will not hear of poisoning the drinking water of the enemy. Bull-fights in Spain, cock-fights in America, rat-fights among the lowest

and most depraved classes, dog-fights and cat-fights among criminals and children, all testify to the powerful *rôle* still played among the most civilised races by this class of psychic atavisms. Mantegazza even goes so far as to say that he himself has seen and noted many times in physiologists, surgeons, soldiers in battle and other 'professional killers,' involuntary muscular twitches and movements which manifested the pleasure they took in killing. But in more 'peaceful' walks of life these tendencies surge up also. The same writer mentions the case of a lawyer, whose favourite occupation consisted in the cruel pursuit of wall-lizards, and that of a nobleman, who liked to feast his eyes on the death-struggles of cats slowly boiling to death in pots covered with a wire-grating. In children, again, this class of atavisms appear with remarkable frequency and in notable exaggeration; the deliberate pulling to pieces of a fly or the tearing apart limb by limb of some poor quivering bird is a familiar instance.

These 'cruelty atavisms' have been much discussed of late years by writers who have dealt with the facts of childhood. Commenting upon the famous saying of La Fontaine,—'this age is pitiless,'—Compayré remarks (123, p. 308): 'To judge from appearances, La Fontaine is right. But the alleged cruelty of the child when he tortures animals is, at bottom, only ignorance. The child is a Cartesian without knowing it; he makes no distinction between his Punch and his dog. If the doctrine of the automatism of animals had not had the good fortune to enter one day the brain of a great philosopher, it would find at least perpetual adherents in all those little executioners of two or three years, who torture their favourite animals only because they do not know they hurt them.' Ignorance and curiosity, together, explain much of the 'cruelty' attributed to the child.

According to the best teachings of the modern criminologists, 'a certain amount of cruelty is almost normal in healthy children,' and 'the instinctive criminal is more distinctly marked by his continuance of the same practices throughout life' (184, p. 130). Among one hundred criminals studied by Rossi,[1] ten manifested this exaggerated and precocious cruelty—one, as a child, being fond of stripping young birds of their feathers and then roasting them alive,

[1] *Arch. d. Psich.*, 1889.

while another visited upon birds the punishments received at the hands of his parents.

The child is very often similarly-minded to the aborigines of Australia of whom Lumholtz writes: 'During my sojourn at Herbert Vale a woman offered to sell me a bird, which she had deprived of the power of flight by plucking out the feathers of the wings and tail. She laughed at and was merry over the poor bird, which was unable to fly away. The natives may often appear cruel towards animals and birds, though it is not their intention to give pain to the game they capture. It amuses them to see maimed animals making desperate efforts to get away. As a rule, they kill the animal at once, not for the purpose of relieving it from pain, but simply to make sure of their game. On many occasions I observed how the blacks amused themselves by watching kangaroos whose hind legs had been maimed struggling in vain to get away.

'Any studied cruelty towards the white men is out of the question. They do not, like the Indians, use torture, for they are anxious to take the life of their enemies as soon as possible' (381, p. 222).

Steinmetz's view of the development of the feeling of revenge, from 'an original stage of undirected revenge,' in which the injury was retaliated indiscriminately on anyone, through a stage of less indiscrimination, in which man came gradually to the consciousness that 'the best means of restraining wrong was to punish a certain person, viz., the wrong-doer,' has been criticised by Westermarck (680, p. 291), who thinks many of the cases cited in proof of the theory merely exemplify 'sudden anger,' 'outbursts of wounded-self-feeling,' 'fits of passion,' and not revenge in the real sense of the term, 'which, when not directed against its proper object, can afford only an inadequate consolation to a revengeful man.' Other cases are as surely the records of 'established and recognised customs, and show to what an extreme the sufferings of innocent people are disregarded among many savage races.' Custom, indeed, often clouds some of the seemingly clear and strongly-marked instincts of the savage, and Dr Westermarck is quite right in denouncing the uncritical interpretations of these 'survivals from earlier stages through which the human race has passed.' According to Westermarck, animal psychology enables us to furnish the series of evolution-

ary stages: 'protective reflex action, anger without intention to cause suffering, anger with such an intention, more deliberate resentment or revenge,' phenomena, all of which 'are so inseparably connected with each other that no one can say where one passes into another.'

A very interesting contribution to the study of 'cruelty atavisms' is Dr F. L. Burk's recent paper on 'Teasing and Bullying,' wherein are contained the results ('the responses include about 1120 instances of teasing and bullying, principally reminiscent, and a few hearsay') of a syllabus-inquiry on the subject. The varieties of 'bullying and teasing' include fighting; egotistic assertion of authority; obtaining property, service, obedience, etc., by bullying; tormenting, teasing, hindering, 'aggravating'; excitation of fear; performing, or 'almost performing' forbidden things; teasing by taking away or hiding property; teasing by calling names; testing temper; teasing individuals with personal peculiarities; exciting disappointment; pleasurable teasing about beaux, possessions, etc.; bullying voluntarily accepted by the victim, etc. The varieties last mentioned are of considerable importance, for these same self-humiliations and abasements are rife to-day in children, who thus seek to appease their offended companions, playmates, friends, in lovers who try to win back the favour of the objects of their affections, in women who endeavour to rehabilitate themselves in the eyes of angered or offended husbands. The parlour-game of 'forfeits,' and similar sports in vogue among children, often recall the same primitive actions, akin to which are also many of the initiation-ceremonies of secret societies of children and of adults, ancient and modern, savage and civilised. The admission of children to manhood, of women to marriage, of strangers and foreigners to citizenship or membership in tribal or religious organisations, the restoration of captives and criminals to life and activity, all these episodes were accompanied by acts of humiliation and self-abasement, the shades of which yet wander over the playgrounds of the young as well as the parlours and club-rooms of the adults of modern cultured races. These are mostly the remains of punishments in which the idea of humiliation (now given a sort of altruistic turn and carried on with the consent of the victim, who smiles at his own abasement or annoyance) has more and more prevailed over the thought of physical torture, so common among many of the early races of men.

Burk (and likewise President Hall) is inclined to look upon some of the phenomena of teasing and bullying as a rude but necessary species of physical education for the child, the physical exertions therein concerned being 'fragmentary rudiments of past combat, capture, and killing of prey and enemies,' and, therefore, 'clearly the most ancient forms of physical exercise, by which and for which the organism developed, and has become what it was and is'—they are, in fact, 'racial forms of all exercise' (92, p. 371). This is to be understood of fighting and the various forms of personal struggle and contact appearing in tag, prisoner's base, blind man's buff, football, baseball, etc., and all exercises and games in which striking, pursuing, capturing, holding, treating in contempt and triumph, throwing missiles, etc., figure as essential factors. The teasing impulse, as both Burk and Groos point out, is often largely in the nature of play, and, as the latter notes, it has not infrequently a social *rôle* in securing the survival of the strongest in the sense of him who is able to withstand best the 'teasing and bullying' of his fellows. Among some primitive peoples, and with some half-civilised (Siamese, *e.g.*, according to Bastian), teasing is almost a fine art (253, p. 294). One must read Groos's illuminating discussion of plays of animals and of men in order to appreciate rightly the views put forward in such essays as Johnson's 'Savagery of Boyhood,' and Boyle's 'Persistence of Savagery in Civilisation,' to say nothing of the less reasonable literature of the Lombrosan school of criminologists, so many of whom attach altogether too much importance to atavisms of this sort.

Miscellaneous Atavisms.—Under the head of miscellaneous atavisms Mantegazza has grouped a large number of regressive phenomena, *e.g.*, the occurrence of mental and psychic peculiarities and qualities of ancestors in their descendants, without any physical resemblance between the latter and the former; Mantegazza, himself, who does not at all resemble his paternal great-grandmother, possesses, nevertheless, her marked *penchant* for gardening. Other examples are: (*a*) Sometimes to-day the Bolivian Indians appear before the judge and request to be beaten with a stick—a remembrancer of Incasial and Spanish despotism; (*b*) women in the height of their love-passion would be beaten by the objects of their affection, and dream that in their embraces they have been mutilated or tortured till the blood came—a recollection of the past ages of tyranny when

the husband was practically the executioner, the women the sacrificial offering; (*c*) the exaggerated fear-movements of the Jews in the countries of modern Europe—a form of psychic atavism which recalls the age-long persecutions to which they have been subjected at the hands of the Christian nations; (*d*) the dignity of countenance of the 'last Roman'—calling up again a mighty people, who, for centuries, ruled the world; (*e*) the majesty of a Castilian beggar in rags—bringing back the departed greatness and vanished glory of Spain.

From a careful study of the family likenesses of the Hohenzollerns and the Bourbons, Count Theodore Zichy reaches the following conclusions: 1. Nearly everybody has the features of some not very remote ancestor (if all the series were present at once such resemblances would be clearly perceived). 2. A constant inherited family type does exist in certain stocks, but by no means in all. 3. Between brothers and sisters (children of the same family) resemblances are frequent, but, for the most part, noticeable only in youth. 4. Resemblances between parents and children are best confirmed during the youth of the individuals. 5. Here and there occur in individuals striking resemblances to very remote ancestors (695).

Dr E. G. Lancaster, in his essay on the psychology and pedagogy of adolescence (345, p. 17), calls attention to the changes of form and feature in the growing child, some of which hint heredity, 'the final struggle and opportunity to establish the type coming at adolescence.' The author cites the following interesting case in point: 'As a babe he looked like his mother. At two to three he was the childish image of her mother, while in the way he stood and in a peculiarity of falling he showed their traits. Since five or six he has grown to look very much as his father did at that age, and a photograph of the father taken when he was seven is a good likeness of the boy at seven. He now walks and acts like his father. He will undoubtedly look like the father and the father's family.' Allied phenomena are also noted, the variety of 'ancestral traits cropping out' being quite extensive—mental peculiarities, movements, gait, gesture, voice, etc.

Dr Bucke's Outré Views.—Some advanced, if not altogether extravagant, ideas concerning the 'Mental Evolution of Man' have recently been published by Dr R. M. Bucke, in an address before the British Medical Association at Montreal (88).

The author holds that 'the mental plane of the higher animals is that of the human being at about two years of age,' that 'the third year of life represents in the race the age of the *alalus homo*, the period of perhaps 100,000 years ago, when our ancestors walked erect, but not having self-consciousness had no true language,' while 'the advance made by the individual from the age of three to that of thirty-five represents the advance of the race between the date of the appearance of self-consciousness and to-day. Dr Bucke also thinks that 'the longer the race is in possession of a faculty, the more universal will it be in the race and the more firmly fixed in the individuals of the race,' the musical sense, *e.g.*, is now in process of birth into the race, being not present in more than one half of it. The mind during sleep 'is more primitive than the waking mind,' and 'in dreams we pass backward into pre-human mental life.' All forms of insanity and idiocy, Dr Bucke believes, are cases of atavism, and rapid mental evolution is responsible for insanity.

Dr Donath, in his brief but interesting address on 'The Beginnings of the Human Mind' (171, pp. 16-20), criticises many of these statements of Bucke, and protests against the tendency 'to discover atavism in everything born with abnormal development or disposition.' He rightly objects: 'When the embryo has a limb cut off by the navel-string winding about it, that is certainly no atavistic phenomenon; nor is it when a germ infected by syphilis or poisoned by alcoholism causes to be born an epileptic or an idiot child.' So, too, hysteria and lunacy are not reversions to primitive forms of mind, while other phenomena, hastily judged atavistic, are due to mechanical interferences, the action of chemical substances, etc. The keen logic and apt judgment of many primitive peoples, together with the existence of corresponding phenomena in animals known to dream, the actuality and the liveliness of these dreams, do not altogether favour the view of the extreme pre-human character of such phenomena. The opinion of Dr Bucke that all forms of lunacy and idiocy are atavistic is certainly weakened by the fact that these phenomena increase and decrease for sociological reasons, and seem to be greatly influenced by syphilis and alcoholism.

Fear Atavisms.—The fears of childhood are 'remembered at every step,' and have been since the grey dawn of civilisation. Mosso, in his monograph on fear (443, p. 226), says:

'The one who brings up a child represents its brain. Every ugly thing told to the child, every shock, every fright given him, will remain, like minute splinters in the flesh, to torture him all his life long.' The bravest old soldier, the most daring young reprobrate alike are incapable of forgetting them all, for 'the eye of the child seems to cast one more look upon these scenes from out of the very depths of the soul.' The lamias, the masks, the bogies, ogres, hobgoblins, witches and wizards, the things that bite and peck, that clutch and scratch, that nip and crunch, that pinch and tear, the thousand and one imaginary monsters of the mother, the nurse or the servant, have had their effect, and 'hundreds of generations have worked to denaturalise the brains of children.' This is added to the hereditary fears which children have of dogs and cats, and the spectres of their dreams, so vividly real. Birds, the most fear-showing of all animals, and guinea-pigs, of all mammals the most susceptible to fright, hardly have behind them the fear-heredity of the child. In the words of Mosso: 'What we call instinct is the voice of past generations reverberating like a distant echo in the cells of the nervous system. We feel the breath, the advice, the experience of all men, from those who lived on acorns and struggled with wild beasts, dying naked in the forest, down to the virtue and toil of our father, the fear and love of our mother.' Although we cannot justly trace religion back to fear, as did the ancient philosopher, for that great storehouse of human feelings and emotion has many monuments of love as well, fear has done much for the human race.

One of the most remarkable contributions to the literature of atavism which have appeared of recent years is President Hall's elaborate 'Study of Fears,' in which are discussed the data (obtained by the syllabus method) concerning the nature and significance of 'the chief fears (298 different things) of 1701 people mostly under twenty-three years of age.' Fear is one of the aspects of the human soul where we may expect to find reflections and reverberations of all the past ages of life in the world, its shocks and sudden metamorphoses, its long subjection to particular environments, its contact with all the conditions of earth, sea and sky, and 'the relative intensity of these fears fits past conditions far better than it does present ones'; and, in youth, especially, 'the intensity of many fears is out of all proportion to the exciting cause.' 'Night is now

the safest time,' says Dr Hall (276, p. 247), 'serpents are no longer among our most fatal foes, and most of the animal fears do not fit the present conditions of civilised life; strangers are not usually dangerous, nor are big eyes and teeth; celestial fears fit the heavens of ancient superstition, and not the heavens of modern science. The weather fears and the incessant talk about the weather fit a condition of life in trees, caves or tents, or at least of far greater exposure and less protection from heat, cold, storm, etc., than present houses, carriages, and even dress afford. . . . The first experiences with water, the moderate noise of the wind, or the distant thunder, etc., might excite faint fear, but why does it sometimes make children on the instant frantic with panic?' The past of man forever seems to linger in his present, and the child no less sums up and reflects past ages of fear and past fear-experiences than he summarises physically the story of mankind.

Among the principal fears which President Hall seeks more or less to explain thus are:—

1. *Gravity Fears.*—Fears of high places and fears of falling; dropping, hovering, 'cosmic giddiness,' gliding, balancing, flying, climbing, and other sensations not fears. Some of these, Dr Hall thinks, 'may be considered as instances of arrest, some at the stage before erect position was acquired,' while others are 'due to an awakening of the normal impulse of the young of the human species to get up, not only to the full length of the body, but beyond.' Man's erect position, 'exceptional and lately acquired,' counts for not a little here.

2. *Fear of losing Orientation.*—Some of the phenomena here 'almost suggest atavistic relapse toward the early forms of sessile life, or attachment to parental bodies, and remind us how slow and late in the animal series well-developed locomotor organs came,' while others, on the other hand, 'suggest the migratory instincts of birds, fishes, animals, nomadic races, the spring fever so common among northern races after their long winter, *scholares vagantes*, tramps, explorers, globe-trotters, etc.' Here we have reminiscences of 'the mortal dangers of getting lost in a primitive gregarious life,' which were vivid and 'prompted to a careful study of all land-marks.'

3. *Fear of Closeness, Smothering, Choking, Stifling, Oppression.*—Some of the 'reverberations' here seem to go back to the most primitive forms of life, while others suggest the 'un-

confined' range of nomadic peoples, repeated, perhaps, in the tendency of prisoners to 'break out,' and preserved in the 'free air' democracies of the old world.

4. *Fears of Water.*—Some of the *phobias* here may be 'purely instinctive vestiges, which originated somewhere since the time when our remote ancestors left the sea, ceased to be amphibious, and made the land their home'; in the 'weaning from the home of all life,' the discipline was stern as the alternating and sometimes intense love for water as compared with fear of water shows. Both love of water and fear of water have been conditions for survival in the past of animal life, hence the persistence of both to-day in the child.

5. *Fears of Wind.*—Here we meet with evidence that 'wind, more perhaps than any or all things else, created in primitive consciousness the unseen spiritual world.' In children and adolescents we may discover 'some trace or scar of the more dreadful storms of the long age of diluvial man, or even of the older sea.'

6. *Fears of Celestial Objects.*—In the soul of the child we can still find 'abundant traces of the original psychoplasm, out of which primitive man created the many fairy or demonial beings seen in cloud, fog, and all the phenomena of day and night.' Children and adults have for ages been arrested at various stages of such development, and their fears made panicky or permanent.

7. *Fear of Fire.*—Here we have suggestions of 'fossil forms of neural tweaks, inherited terrors, thrills and shudders, which we may regard as survivals from a stage of psychic life so low and so far transcended that the adult consciousness, while it may repress, cannot uproot them.' There are traces also of another psychosis born of the companionship of primitive man and fire, so that even now 'just to idly gaze at fire starts dreamy reveries, veined through which are traces of very primeval yet earnest thinking.'

8. *Fear of Darkness.*—Though some children are certainly free from this *phobia*, there is abundant evidence of 'the intense and manifold fears of every kind of monster, accident, dreadful men, or worse ghosts that prey upon childhood in the dark.' Lacking our 'better knowledge,' children are back with primitive man under the rule of 'the old night of ignorance, mother of fears,' old scars of the battle against which they seem often to reveal.

9. *Dream Fears.*—Like primitive man, the child realises in dreams what he often fears only in waking hours, and the reverberations from the past life of the race are often easier and more detailed.

10. *Shock.*—In the animal world dread of shock and surprise has led to many modifications of habits and to many devices for preservation of the individual and of the species. In children, 'we still get glimpses not only of what the ancient chaos of ignorance really meant, and of the awful struggle and loss by which it has been overcome, but also of the sanifying culture power of what are now the common-places of science.'

11. *Fear of Thunder and Lightning.*—One notable fact confronting us here is that 'for primitive consciousness, belief in and reverence of powers above are never so fervid as in a thunderstorm,' and the child repeats the history of the race in his thunder-fears, which modern society makes so little use of for moral, æsthetic, and religious ends.

12. *Fear of Animals.*—Here, especially, we catch glimpses of lapsed reflexes, fragments and relics of psychic states and acts, which are now rarely seen in all their former vigour, and which neither the individual life of the child nor even present conditions can wholly explain. Fear of cat, dog, cow, etc., may only be coeval with the domestication of animals, but fears of reptiles, especially snakes, as marked in the race as they are in the individual (monkey no less than man) go back much farther in the history of life, as must also do some of the factors in the child's general love of animals that so often casts out all fear.

13. *Fear of Eyes.*—In a certain sense, even in man, the eye is the first thing, and often it is all things. The 'big eyes' that frighten the bad child, like those the savage carves on his weapons, masks, canoes, etc., 'must owe some of their terrors to ancestral reverberations from the long ages during which man struggled for existence with animals with big or strange eyes and teeth, and from the long war of all against all within his own species.'

14. *Fear of Teeth.*—Here the kiss has conquered after long ages the old 'archaic dread' that spread abroad 'supreme fear wherever the law "eat or be eaten" reigned.' The child, here, too, is older than the man.

15. *Fear of Fur.*—Both love and fear of fur are 'so

strong and instinctive that they can hardly be fully accounted for without recourse to a time when association with animals was far closer than now, or, perhaps, when our remote ancestors were hairy.'

16. *Fears of Persons.* — In the fears, blushing, etc., of children, we find still 'the echo of old dreads of alien faces long after the voluntary muscles or their cerebral centres need not be flushed for flight or fight,' and even 'shyness, coyness, maidenly modesty, owe their charm to the female reluctance born of fear.' Unconsciously children still treat even friends as possible enemies.

17. *Fear of Solitude.*—Man is a gregarious animal, and in children's 'horror of being alone,' we see, often in arrested and hypertrophied form, the fear that has much to do in 'making the fashions, parties, and sects of the most imitative of all creatures.' The long dependent infancy of the human being has been a factor here.

18. *Fears of Death and of Disease.*—These fears, unlike those of animals, seem rather to increase than to decline with civilisation, and their absence, rather than their presence, must be looked upon as atavistic. In these fears the root from which they spring lies beyond the savage even, while some noble struggles to-day against death and disease 'must, in part, have been made possible by heredity from a time of ancient relative indifference to death.'

19. *Fears of Ghosts.*—Here we must admit that some fears 'have taken their rise in the early human period,' and man still 'inherits from a savage ancestry a pre-potent bias, which haunts the very nerves and pulses of the most cultured, to believe in ghosts.'

Fear, if it be as G. Stanley Hall suggests, 'anticipatory pain,' has been a great schoolmaster of the race, and the timid, who so often are the wisest, have survived not alone by the pre-perception of the future, but also by the suggestion of the past. Fear was, perhaps, the first attempt of the race to make use of its past, and out of this has come abundance of knowledge.

Anger Atavisms.—Atavistic in its general character and in many of its specific tendencies is Dr Hall's latest 'Study of Anger,' in which also the doctrine is advanced that 'most of the history of life as recorded in the rocks since the amphioxus, has been devoted to the development of muscles, and to

laying the basis of all that they presuppose for the soul; and the suggestion is irresistible that the roots of our emotional life must be traced back to those Palæologic ages where pre-vertebrate life had its fullest development' (277, p. 77). The story of anger, like that of fear, demonstrates the fact that 'the feelings are infinitely older than the will, as it is older than the intellect.'

Among other physical manifestations of anger, which seem to be atavistic, Dr Hall notes the following:—1. *Swallowing, impulse to swallow, etc.*—These concomitants of the early stage of anger in many individuals suggest the actions of the carnivora and other 'palæo-psychic associations' of the attack and slaughter of prey—'the normal prelude to eating it.' 2. *Salivation.*—Suggests the 'primitive anticipation of savoury food' in creatures that kill their prey. 3. *Spitting.*—Suggestive of the purposive and aggressive 'spitting' of many animals—especially noticeable in children. 4. *Respiration.*—The modifications and disturbances of breathing, which often accompany anger in so marked a fashion, suggest the 'preparation for a long dive, with violent exercise,' and the 'periods of deep and rapid breathing, alternating with longer periods of rest,' required by amphibian life. 5. *Noises.*—The characteristic 'cries, snarls, growls, whoops, bellows, chatters, bleats, grunts, barks,' and other noises of children, and often of adults in anger, suggest the cries and noises made by various of the lower animals. The howls of packs of animals have their fellows, if not their descendants, in the battle-cries of savage races and the defiant college-yells at athletic contests. 6. *Attitudes and Postures.*—Many of the characteristic postures and attitudes of persons in angry moods suggest the actions of the lower animals. 7. *Butting and pounding with the head.*—These accompaniments of anger, seen especially in young children (boys generally), and in some of the lower races (*e.g.*, Negroes), receive some explanation from the fact that 'early vertebrates, both aquatic and terrestrial, move head first, and there is thus a long ancestral experience of removing obstacles and breaking way through water with the head.' The sideways blows of the head in butting, and the threatening sideway nod of children in incipient anger, 'are interesting when we reflect on the number of horned species in the human pedigree.' 8. *Stamping and treading* upon the toes, feet, or other parts of the body of an opponent

in anger (*cf.*, the savage dances in which the ground is stamped with great force) suggests the 'stamping of the enemy under foot,' indulged in by some of the lower animals —repeated by the brutal classes in civilised human communities. 9. *Making faces.*—The virtuoso-skill of children in 'making faces,' not in anger merely, and the 'strange passion for masks' seen in the dances, etc., of savages, suggest the characteristic grimaces of the monkeys and other animals, on the one hand, and, on the other, the 'facial expressions intended to strike terror,' so common in the lower animals. 10. *Biting, chewing.*—Perhaps 'the last vaso-motor or involuntary automatic residues of what was once a fully unfolded carnivorous psychosis' are seen in the 'mouth-consciousness,' and 'the would-like-to-eat' feelings of certain individuals in anger, while the sneer and *spasmus cynicus* are 'relics of dental attack' more fully represented by the biting, chewing, 'gripping' of children, idiots, savages, and the lower and criminal classes among civilised peoples, besides certain sexual degenerates. 11. *Scratching, clawing, clutching, pinching, pulling, etc.*—Many of the phenomena belonging here in childhood may receive explanation from the ancient and effective use of the paws and claws 'in the felidæ and other animals, both in and near the conjectural line of human evolution.' The mutilations occurring correspond often to those in the animal-fights of ages past; the baby's 'grip,' too, suggests arboreal life. 12. *Hugging.*—This accompaniment of anger in children (girls especially) suggests the aggressive, crushing, strangling movements of some of the lower animals. 13. *Pushing, striking, etc.*—These more human accompaniments, so common in children, suggest the savage races of men, some of the anthropoids, and certain animals lower down in the scale of being. 14. *Anger at inanimate and insentient objects.*—Very common in children, savages and the uneducated. Here 'we seem to have a momentary lapse back to a primitive animistic stage of psychic evolution, in which the distinction between the things that have life and feeling and those that lack both was not established.'

The vents of anger, the reactions from anger, the control of anger, the *abandon* in anger, the individual and sexual variations, the correlations between anger and fear, and other emotions, all offer other examples of atavistic or retrogressive phenomena.

Work and Play.—That the work of adults in one age of human history becomes the play of children in another is an idea made familiar by the researches of Tylor and other writers of the anthropological school. Professor Jastrow, in the course of his essay on analogy, remarks that 'the principle that what was once the serious occupation of men becomes in more advanced stages of culture the play of children, or is reduced from seriousness to mere amusement, finds illustration in the mental as in the material world. The drum, once the serious, terrifying instrument of the savage warrior, and the rattle, once the powerful emblem of the medicine-man, have become the common toys of children. The bow and arrow are used for skill and sport only' (313).

Weapons.—Concerning the bow and arrow in Polynesia, Professor O. T. Mason writes (411, p. 386): 'The pure Polynesians seem to have had no bows. . . . The bow has not been known as a weapon among the brown Polynesians in historical times. Its occurrence as a toy in one place, and as a ceremonial object in another, may point to a prehistoric use, but the fact remains that, while the negroid peoples around them carried the arrow especially to a high degree of perfection, the brown race discarded the apparatus of the archer altogether.' In Hawaii, the bow seems never to have been used in war, but only employed by the chiefs in shooting mice in connection with certain religious ceremonies. Arrow or dart throwing, which was formerly a man's game, is now played by boys and girls, so also with reed-throwing in some of the other Polynesian Islands, according to Mr Culin (135, p. 233.)

Among even the lower races of mankind, those who have not reached the stages of civilisation at all, the games and toys of the children, which have not yet been thoroughly studied from the point of view of evolution, seem to represent a bygone manhood, or to forecast a future one, just as with us. The story of the 'blow-gun' is like that of the bow. The 'blow-gun,' or 'blow-tube,' the predecessor of the rifle and the air-gun (some of the Indians of the Gulf States even 'lashed several reeds together, thus anticipating the revolver'), is a characteristic war and hunting weapon among many tribes of the Orinoco-Amazonian region of South America and the Malay Peninsula and Archipelago of South-Eastern Asia. It is also known in Central America, and among the Cherokees

and some other Indian peoples of the south-eastern portion of the United States. According to Professor Mason (411, p. 279), in Copan, in Guatemala, 'even the children go armed with a sarbacan, or blow-tube, an instrument which they use very dexterously, and which they have inherited from their earliest ancestors.' Of certain Indians of the western United States, Captain J. G. Bourke, who knew them well, says,[1] 'It is not unlikely that the Apaches were once familiar with some form of the blow-gun, because their children occasionally make use of a toy constructed on the same principle.' With some savage peoples, then, the blow-tube would seem to have been used in about the same fashion as that delight of civilised children the 'pea-shooter,' one of its modern descendants and representatives.

Bull-roarer.—The 'bull-roarer,' or 'whizzing stick,' which, among many barbarous and savage tribes of both hemispheres, is an instrument of solemn or magical ceremonial significance, especially in connection with the initiation rites at puberty, is with the children of civilised races a common plaything. This it also seems to be with some primitive peoples. According to Mr John Murdoch,[2] the 'whizzing stick' is very common among the Eskimo of north-western Alaska, and 'is as purely a child's toy as it is among civilised peoples.' The bull-roarer is known also as a children's toy or common plaything in Hawaii, and in several other parts of Polynesia, together with several other whirring and whizzing devices of like sort, although in certain portions of the Pacific region it is used in connection with the sacred mysteries, or to drive away ghosts (135, p. 220). Doubtless careful study of the distribution of this particular instrument will reveal many other instances of its employment as a toy among peoples who are quite as primitive as those with whom it is in use for more serious and important purposes.

Chinese 'play' with Inventions. — One cannot always be sure that the children in such cases have the things as toys which their ancestors used as implements or weapons, for it may be that these have always been with certain peoples children's toys only, or have, perhaps, never progressed beyond the stage of amusement or inventive satisfaction. The Chinese, in some respects, mentally, as well as physically, are one of the

[1] *Amer. Anthr., III.* p. 258.
[2] *Amer. Anthr., III.* p. 59.

most childlike peoples on the globe, and Dr Brinton calls attention to their 'insufficiency of development, strikingly illustrated by the little use they made of important discoveries' —the magnetic needle, gunpowder, movable type, etc. This people 'were acquainted as early as 121 A.D. with the power of the magnet to point to the north, but the needle was never used in navigation, but only as a toy. They manufactured powder long before the Europeans, but only to put it in fire-crackers. They invented printing with movable type in the eleventh century, but never adopted it in their printing offices. They have domesticated cattle for thousands of years, but do not milk the cows nor make butter' (74, p. 200). This example of a people so numerous and so remarkably ingenious in many directions, as are the Chinese, continuing for ages to play, as it were, with such great inventions, is perhaps unparalleled.

Mr David Boyle, in his discussion of 'The Persistence of Savagery in Civilisation,' traces to a savage source the stone-throwing proclivities of boys, and their indulgence, later on, in the use of slings, bows and arrows, pea-shooters, and later still, revolvers, rifles, etc. (69, p. 130). But here it is not so much a question of play perhaps as of perpetuated savagery. The same thing might be said of 'cruelty to animals, cocking-mains, pugilism, man-bull fights, etc.,' while sports and games may be only 'improved forms of old hand-to-hand encounters,' and music and dancing still bear the traces of their connection with the excitement and rejoicings of war and battle.

Kite-flying.—Kite-flying, which, except for scientific purposes, is, with us, a children's amusement and a sport of youth, is by no means such all over the world. In China, from time immemorial, adults have delighted in this sport, which is also known of old time in Japan and the Far East generally.

Among the Polynesians also kite-flying was by no means confined to children or youths. In the Hervey Islands, according to Mr Gill, kite-flying was in times of peace 'the great delight of aged men,' and in Hawaii people of all ages flew kites, as was also the case in New Zealand and elsewhere. Codrington tells us that 'kites used in fishing in the Solomon Islands and Santa Cruz are used as toys in Bank's Islands and New Hebrides, although not commonly of late years' (135,

p. 276). Here we have a scientific (as it were) use of the kite and a play-use, comparable to the use of the kite to-day with us for meteorological purposes and its use in games by our children.

Dolls.—Dr J. W. Fewkes, who has made a long and careful study of the rites and ceremonies of the Pueblos Indians, believes that 'dolls among civilised nations are simple survivals of figurines used as idols,' and sees in the 'images given to little girls' in certain ceremonies of the Tusayan Indians, a 'transition stage in which the doll still preserves the symbolic marks [these wooden images invariably bear the symbolism of different mythological personages called *ka-tcí-nas* which figure in the sacred dances] characteristic of the idol.'[1]

In an exhaustive study of the 'Dolls of the Tusayan Indians,' the same authority discusses the matter in great detail. Some of the facts suggest a connection between 'doll-cult and ancestor-worship,' but, as may be seen from the authorities cited in the 'Study of Dolls' by Mr A. C. Ellis and President Hall, there is no general agreement among ethnologists as to any connection between dolls and religion, mythology, fetishes, emblems, idols, etc., the majority agreeing with Dr Brinton that 'while certain dolls may be made in the image of fetishes or idols, the sentiment of playing with dolls seems altogether too spontaneous and independent to have been derived from ceremonies' (182, p. 173). The variations in the 'doll-cult' with primitive peoples as among civilised children are very great, while the antiquity of dolls as mere toys is very great, as the catacombs of Rome, the graves of the ancient Peruvians and Egyptians prove, while, as Andree notes, Sardes, in Asia Minor, was an ancient factory town of dolls, etc., just as Nürnberg and Sonneberg are to-day (8, p. 53); the Orient was the home of many dolls, that afterwards found welcome in Europe, just as it was the native place of many of the games and plays of children.

Songs and Games of Children.—According to Mr W. W. Newell (456, p. 1), who has investigated the 'Games and Songs of American Children,' there seems to be no doubt that 'a majority of the games of children are played with rhyme-formulas, which have been handed down from generation to generation.' The metre of some of the German children's songs, Dr Hildebrand has shown (297, p. 33), is of the oldest

[1] *Amer. Anthr.*, VII. p. 38.

known Germanic type, forms of verse that the greatest poets of the nation, Goethe and Schiller, have often used, and yet forms so ancient and so characteristic of child-song, that it might even be said that 'we owe German metre to the children.' The rhythm of 'Bauer baue Kessel' is old as that of Otfried, and springs from the same source. Tiersot, in his 'History of Folk-Song in France' (p. 131), notes that a variant of the familiar round 'Pont d'Avignon,' served as a theme for a Huguenot psalm of the sixteenth century, and not a few other serious compositions in many countries go back to the naïve simplicity of child-song.

Dr H. Carrington Bolton, in his classic study of the 'Counting-Out Rhymes of Children,' those meaningless jingles with which children all over the globe begin their games and make their decisions, comes to the conclusion that we have in them a notable example of the survival in the usages of children of the serious practices of adults in primitive stages of culture, these rhymes really representing the mysterious sortilegic formulæ of past ages; children now select their leader or partner as once men selected victims for sacrifice. This view has received wide credence among folk-lorists of recent years, but there is more than one argument against it. Mr W. W. Newell, the eminent American folk-lorist, holds that while these 'childish formulas' may have arisen from 'a serious superstition,' the formulas do not, in themselves, bear out such a theory, it being quite possible that 'the meaningless form of the rhymes is the natural result of transference from language to language, and of time.' Another point of importance is noted by Mr Newell, viz., that in the 'counting-out' of children 'the selected person is he on whom the lot does *not* fall,' something not characteristic of sacrificial rites and formulæ, but 'a usage for which there is an obvious reason in the game itself.' The practice of 'successive exclusions' is thus characteristic of the child-procedure, and 'the adoption of syllables instead of numbers is especially intended to secure fairness; it is more difficult to calculate the result.' If the 'counting-out' of children has really originated in forgotten sortilegic rites, it is clear that the child-mind, or some other influence, has interfered to shape it admirably to the necessities of its present employment. The existence of these children's rites side by side with the serious ceremonials of people more or less primitive, with no clear indication of the derivation of the former from the latter, is also

a point worth consideration in the discussion of their ultimate source.[1] Nonsense refrains for dances and similar exercises are known all over the world in every stage of culture, no less than among the children of civilised men, whose rhymes and whose poetry have so often such a large element of purely unintelligible or unmeaning sounds in them. Much of the earliest composition of a literary nature among primitive people and children, quite apart from rite or ceremony, consists of 'nonsense words and syllables.' Wallaschek, in his investigation of 'Primitive Music,' and Bolton, in his study of 'Rhythm,' have called marked attention to these nonsense refrains, chants, jingles, repetitions and spontaneous rhythmic utterances, common to primitive man and the civilised child. Evidence that very much of human poetry has been developed from just such unintelligible verse, in which alliteration and rhyme often seem to occur quite accidentally, is to be found not only in the great collections of children's song-games, such as those of Newell and Gomme, or in the chants of savage and barbarous peoples, but also in the nonsense refrains, chorus, etc., of many of the hymns and popular songs of the most cultured races of the globe. The resemblance between the metre of the poetry of children's games and the rhythm of their spontaneous utterances is pointed out by Dr Bolton, who cites numerous examples in illustration of the *rapprochement*. The ethnographic and ethnological aspects of the games and sports of children and adults have been discussed in the essays of Tylor, Andree, Culin, etc., where a mass of interesting information will be found.

According to Miss Paola Lombroso (369, p. 132), the classic, traditional plays and games 'stand in the same relation to those invented by the child, as written tradition does to improvisation.' The genius of childhood reveals itself more in the latter than in the former, which are so often transmitted from generation to generation, and found all over the world in but slightly different form and fashion. The practical universality of many games can be seen from a glance into the collections of Pitré, Newell, Gomme, Culin, and the briefer studies of Tylor and Andree. The readiness with which children of European ancestry can fall into the play-life and play-interests of the children of primitive peoples has been noted by many travellers, but no better example can be found

[1] *Journ. Amer. Folk-Lore*, I. p. 242.

than Mrs Rink's account of the play-activities of her childhood among the Eskimo children of Greenland (253, p. 391). Just as the adult savage is so often seized with a passion to imitate all the characteristic movements and actions of the new-come white man, so are children of white descent, in a primitive environment, whenever they are free from the restraints of their civilised elders, seized by a real longing to act as their savage playmates do; one touch of play seems to make all the world of childhood akin, and as a result of the primitive declaration, 'where thou art, I shall be also,' we see laid in Greenland the first stones of a new fabric of civilisation (destined to be destroyed by parental interference), which repeats for us in some measure the first real break from social animality. If, as Guyau tell us, 'modesty has civilised love' in the history of the race, we may say with some assurance that 'play has civilised strength and knowledge.'

Atavisms of Hunting and Fishing.—If there be anything in atavisms, the secret desire and frequent attempts of children to catch birds and animals with the naked hands, or fish with the naked feet, mean a good deal. Professor O. T. Mason tells us that the boy's method of hunting and catching by hand fish, eggs, young animals, shell-fish, insects, etc., is the oldest and the longest to survive (as it does to-day) of all the arts of zootechny. The old proverb, 'A bird in the *hand* is worth two in the bush,' grew up quite naturally it would seem. The Eskimo have been known to catch seals by the flippers as they were escaping to the water; the Wailaki Indians of California, to capture rabbits and deer by running them down; the Micmacs, of Nova Scotia, to run down a stag by continual, unresting pursuit; many primitive hunters (disguised, or in some sort of retreat) capture various water-fowl and other birds with the bare hands. Boys among the Seri Indians 'run down flocks of birds, rabbits, and other swift animals, bringing contempt on themselves if they fail'; certain Indians of British Columbia, and other parts of North and South America, where fish are very abundant, capture them by hand amid the shallows and among the rocks; the Mura, of the Amazon, 'dive for turtles and catch them by the legs'; some Indian tribes of the western coast of the United States 'catch turbot and flounders with their feet'; the Wintun Indians, of California, dive for clams, etc. One is surprised at the universality of this method of capture in America and other parts

of the world, although, of course, higher and more developed methods of hunting and fishing often exist alongside it in the same region and with the same primitive tribe (413, p. 56). Especially noteworthy in this direction is the delight boys often take in chasing animals until they are altogether fatigued, and must perforce give in.

Atavisms of Dress.—The modern civilised man and woman at home or at leisure often wear the garb or the gear of primitive men and women, *in medias res* or on their travels. Children also to-day wear and use not a little of the dress and rigging-out of the earliest races of mankind. Mason has noted many of these survivals in his study of primitive travel and transportation. The light shawl on the arm of the opera-goer or evening visitor goes back to the primitive precautionary garment represented by the Semito-Hamitic girdle or sash that may become a shawl on occasion, the poncho of the Latin Americans, etc. The modern costly walking-cane, the wand of the magician, and the bishop's crozier are all developments of the primitive traveller's staff, the stick of the early carrier. The modern child's night-drawers remind us of the woman's boots of the Eskimo, where shoe, legging and breeches are continuous, and of the costumes of the very primitive natives of the Mackenzie River region. The clog, which survives in tanneries, is the result of the effort of primitive men to keep their feet dry, and the high-heeled shoes of actors and fashionable women spring ultimately from the same effort to rise above the inconveniences of wet land, bog and seashore. The stocking with divided toes was long ago anticipated by the roaming tribes of middle and western Asia. The 'gum-boots' which the climate of New England has made necessary are quite of the old Eskimo pattern. The ice-creepers, so commonly attached to the soles of the boots and shoes in winter time in the New England States, are precisely like those of the Eskimo, Chukchi, Kamchadales, etc., except that they are made of leather and iron. The spiked boots of the runner and football player of to-day find their counterpart in the bone-spiked hunting shoes of the Kamchatkans. And there are many other things that might be enumerated did space permit, but those given here will easily suggest other examples of heirlooms from primitive man into the possession of which (practically unchanged) the civilised child of to-day comes.

Modesty.—The evolution of modesty has been quite recently treated of by Havelock Ellis (188, p. 135), who tells us 'that the child, though very bashful, is wholly devoid of modesty,' as is abundantly proved by the shocking '*inconvenance* of children in speech and act,' and by the 'charming ways in which they innocently disregard the conventions of modesty their elders thrust upon them, or, even when anxious to carry them out, wholly miss the point at issue.' With civilised man, it thus appears, 'the convention of modesty long precedes its real development,' which takes place at the advent of puberty, although modesty is by no means altogether of sexual origin. Savage men, as Ellis notes, are modest not only towards women but towards their own sex as well, as shown by seclusion for the exercise of natural functions, taboos of eating, ceremonial uncleanness, etc. The savage knows also the blush, the hanging of the head and other phenomena connected with modesty, for with him it often 'possesses the strength of a genuine and irresistible instinct,' which does not excite the ridicule and contempt it so often meets with among us. It is among savages that people die for modesty's sake.

There can hardly be any close parallelism between the child before puberty and the lower races of men on the score of modesty (which, as ethnic customs prove, is by no means confined to one particular portion of the body alone), but some sort of comparisons may be instituted between the clothes-lusts of children and those of primitive peoples, and between their eating customs. In the matter of modesty, generally, it is the ignorant classes of our civilised communities, who, with their greater possession of it, will best bear comparison with savage and barbarous peoples.

Progress by Regression.—The irreversibility of regressive evolution—*i.e.*, organs or institutions that have disappeared altogether, or have been reduced to vestigial conditions, can never reappear or develop themselves anew — is an idea supported by Demoor, Massart and Vandervelde, but rejected by Mantegazza, who remarks that 'pathology and atavism furnish us every day with exceptions to such a law—the reappearance of lost organs in the flowers of our garden geraniums, the resurgence of the lost toes of the horse, the republicanism of Rome under Rienzi in the fourteenth century (democracy of olden times in feudal days), the revival of antiquity (educational and scientific) in the Renaissance, the

Romanesque characters of the French Constitution and Government during the Revolution epoch, the revival in 1896 of the Olympian games after fifteen hundred years, were not all of them mere superficial imitations, passing whims or fads; the institution was not able to live in a radically transformed environment.' The real conclusion to be drawn is that 'regression never really is a return to the primitive condition' (398, p. 251). The cause of regressive evolution the authors see in 'the limitation of the means of subsistence' (food for the organisms, capital and strength of labour for societies), a theory, which, as Mantegazza says, is not large enough, nor worthy enough for evolution. Regression, atrophy, disappearance of one organ or institution, mean new aims, new possibilities, new acquisitions, new perfection, new evolution—the reject is certain evidence of the higher project. Function (though it needs food) is more than food, and the mind of man is not threatened eternally by famine. As old Sir Thomas Browne said long ago: 'There is surely a piece of divinity in us'; and this 'piece of divinity' rules all—the harmony of man with the laws of the universe. Regression is the sign of progression, not the evidence of failing nutrition.

The very common opinion that regression always takes place in the inverse order of progressive evolution (an idea favoured by the etymology of the words) is rejected by these authors, as not justified by the facts of botany, zoology and sociology, where there are too many instances of the truth that the disappearance of a useless organ, and not the manner in which it vanishes, is the point of importance, to allow the prevalence of such a general and absolute law. Moreover, variation does not seem to follow laws that are fixed and forms that are immutable, and while the more recent acquisitions do sometimes disappear the first, it has yet to be shown that the persistent portions disappear in the inverse order of their formation, or that the vanished parts reappear once more never to return. The plant-world seems to furnish the least evidence of 'regression in the inverse order of formation,' and in the animal world stability and complexity, strength of stimulus and action of environment, rather than order of origin or of formation, seem to determine the disappearances and the reappearances of biological characters. With man, as Mantegazza points out in his review of the book under discussion, we meet with similar contrasting phenomena (398, p.

251): 'In some cases the most recent institutions disappear the first, while the most ancient last the longest; but in other cases just the opposite happens. We know that legislative, juridical and religious changes follow very long after, never precede, the transformations of the economic, family, or moral order. Tarde has said that imitation happens from within outwards, *i.e.*, aims and sentiments are imitated before their means and expressions. These last (usages, laws or ceremonies of religion) are more recent than the profound changes to which they correspond, and yet, in cases of regressive evolution, they are not sure to be the first to disappear. Titles and heraldry survive the nobility. Houses were considered movable long after the disorganisation of the nomad tribes, whose tent-life has made them adopt that legal idea.'

The history of the various views that have been held by different authorities as to the significance of the metopic suture forms an interesting chapter in the literature of regressive evolution, or progressive atavism. Talbot, in his study of *Degeneracy* (625, p. 162), considers the synostosis, or complete obliteration of the frontal suture, 'normal and in the line of advance.' The earlier writers, generally, like Blumenbach, Hyrtl, etc., looked upon its persistence as an arrest of development merely or as theromorphic. Welcker, however, in 1862, and Anutschin, in 1880, sought to connect it with greater brain development and intelligence, both individual and racially, a view glimpsed by Hunault, in 1740, who, however, linked with strong brain-growth weak and defective bony development. At present, 'metopism,' the persistence more or less even to adult life, of the frontal or metopic suture, the consolidation of which leads to the formation of the characteristic unitary frontal bone of the human skull, is a subject of increasing importance. The question of piscine or reptilian atavism has been driven into the background by the new question of progressive evolution. Papillault's very recent essay, the material for which was furnished by ninety metopic crania from the catacombs of Paris, maintains that the persistence of the suture in question is due to a cerebral superiority, the prime cause of which originates in the brain itself. Metopic skulls, according to Papillault, show a greater development in the regions corresponding to the cerebral hemispheres, and the increase of relative brain-weight apparently accompanying this is but one of the numerous marks of morphologic

superiority such crania possess. As a result of numerous measurements, both of metopic and non-metopic skulls, the author comes to the conclusion that the cause of metopism lies in the brain itself, viz., 'a growth in width of the cerebral lobes, exerting upon the skull a centrifugal pressure, and keeping the two frontal bones separated.' Although one cannot as yet dogmatise upon the matter, the evidence seems to point to a relation between metopism and increased intelligence; the relative superiority in brain-weight, however, may go either with a really better developed intellect, or (without change of intelligence) with a shorter stature (the Negritos, a small-statured people, *e.g.*, offer frequent cases of metopism); the metopic may thus, seemingly, approach the woman or the child. According to Papillault, woman is not as much more metopic than man, as might be perhaps expected, on account of the development of the female brain in the inferior portions, which, in a way, relieve the pressure noted above.

Buschan, like Papillault, looks upon 'metopism,' which he notes as being present among the lower races of the world in the proportion of some 2 per cent., while in the various peoples of white European stock the ratio is much higher, 5.9 per cent. to 12.5 per cent., as a sign of intellectual superiority, not an atavistic inferiority. Far from being due to excessive weakness of the frontal bones, the persistence of the frontal suture is evidence of the very active growth of the cerebral hemispheres.

The metopic suture, favoured by the growth of culture and human social sympathies, may in the future play a highly important *rôle* in the history of the race. It is a marked example of a variation (by many called an atavism), which the advancing civilisation of mankind is bound to allow to come to full fruition. To use the significant words of Papillault: 'Civilisation, by multiplying and strengthening the bonds of social solidarity, by augmenting, in the struggle of interests, the *rôle* of intelligence, and diminishing, in the chances of success, the primitively preponderating influence of brute strength, permits the weak who are intellectually well-endowed to live and to prosper, and thus becomes one of the most powerful factors of metopism.'

The new altruistic struggle for existence in the human race is destined, evidently, to make use of many other phenomena also, whose occurrence in man has been regarded as 'mere

atavisms,' in ways that were not possible under the old law of the survival of the strongest in the physical sense of the term. He who now is able to survive by reason of his social fitness will be able to utilise or re-use innumerable devices which nature abandoned in the brute struggle of the distant past.

A YOUNG BARBARIAN

(A Pueblo Indian Girl, aged about 15, from *Rep. U.S. Nat. Mus.*, Vol. VIII.).

CHAPTER VIII

THE CHILD AND THE SAVAGE

Man and the Animals.—Mme. Clémence Royer, in her study of the *Origin of Man and of Societies*, published nearly thirty years ago (556, p. 95), remarked that man is distinguished from the animals only by a more extensive gamut of passions and more varied instinctive nature: 'His mind is at bottom just the same instrument whose mechanism does not differ from that of the animal; it is a more extensive key-board on which, instead of getting a few unconnected sounds and elementary harmonies, expressing a restricted number of ideas and of feelings, he obtains more and more complicated harmonies, more and more composite melodies, more and more varied rhythms, and so on up to the marvellous symphonies of thought and of passion.'

Professor Wesley Mills, who likewise holds that 'no small part of our psychic life differs from that of animals rather in degree than in kind,' observes also that 'many of the performances of the lower animals, if accomplished by men, would be regarded as indications of the possession of marvellous genius' (427, pp. 16, 13), that indeed 'there is not a single sense that man possesses in which he is not excelled by some one animal, often immeasurably.'

The performances of homing pigeons, the migration of birds, the response of the dog to human language, the perseverance of the cat and its independence, the sensibility of sheep and other domestic animals to approaching atmospherical changes, the achievements of the beaver, the horse, and the elephant of the dog and of less known and less noticed animals, the musical talents of some of the rodents, etc.,

are all wonderful in a way, but there is still reason, perhaps, for halting between two opinions. Professor Mills observes (427, p. 22): 'If the highest among dogs, apes and elephants be compared with the lowest among savage tribes, the balance, whether mental or moral, will not be very largely in man's favour—indeed, in many cases, the reverse.'

Professor Mills believes that while such animals as the dog and the cat 'run through the main stages of their psychic life very much more rapidly than the child,' yet, 'apart from the use of language and the special peculiarities of the psychic activity dependent on this, there is a closer resemblance—at all events, if we restrict our comparisons to unlettered, and especially uncivilised, men—than most persons would suspect, or, owing to prejudices, would be inclined to admit' (427, p. 13). The dog, the kitten and the child at certain periods of their existence are remarkably close together. Professor Mills goes so far as to say that 'many dogs do really know their names in the same sense as very young children, if not even in a higher sense' (427, p. 34), that 'the capacity of animals to communicate with each other by a language of their own is much under-estimated' (427, p. 39), and that 'it is scarcely possible to account for the conduct of the horse, dog, elephant and ape, under certain circumstances, without believing that they have the power to generalise upon details.'

Professor Lester F. Ward (675, p. 242) holds that man is 'simply the most favoured of all the "favoured races" that have struggled up from a remote and humble origin,' and his superiority 'is due almost exclusively to his extraordinary brain development.' Dr Ward thinks also that 'if the developed brain had been awarded to any one of the other animals of nearly the same size as man, that animal would have dominated the earth in much the same way that man does,' for 'a large part of what constitutes the physical superiority of man is directly due to his brain development.' The achievements of this animal would have been entirely different from those of man, but they 'would have had the same rank and secured for that race the same mastery over animate and inanimate nature.'

Professor S. N. Patten (476, p. 116) thinks that the 'rapid progress' of man may have blocked the way for any 'increase in the intelligence of the lower animals,' and that 'it is not pro-

bable that the growth of intelligence would have ceased if man had been destroyed by some misfortune.' The opposition of interests between man and the other animals is one great factor in causing the 'wide gulf now existing between them.' In other words, 'the rapid progress of the human species does not seem to have been due to any inherent superiority, but results from conditions giving to it a better series of requisites for survival than other animals have had.' Some of the other animals, indeed, 'the carnivora and ungulata, seem at one time to have had, in this respect, an advantage over the ancestors of men.' Indeed, were it not for 'obstacles delaying progress until the proper requisites for survival were found,' we might reasonably expect that 'the older species would be the most advanced and have the most intelligence.' Man's ability to survive in new environments, whose new requisites for survival cause 'knowledge to come by leaps and bounds,' is the measure of his progress.

The ethical and juridical aspects of man's relations with the animal world in the course of his progress from savagery to civilisation have been well studied by Bregenzer, who, however, exaggerates somewhat when he concludes that 'the popular ideas concerning the relation of men to animals are, after all, at the root of philosophical theories.' Animal-worship, totemism, sacrifice, domestication, reveal facts which go to show how, from primitive animism, the starting-point of all religious development, man has risen towards a monistic conception of nature, in which animals, no less than children and women—both of whom in ages past had but few inherent privileges—have 'rights.' From the domestication of animals sprang love for them, and love leads to law, though here, as everywhere else, contempt and hate often insinuate themselves; love and monism have waxed together, both man and beast have suffered most when dualism and anthropocentrism ruled in matters of religion. The child in presence of a pet animal, or even a gentle wild one, represents a past age of humanity in which fear readily passed into love and that contact of life and life out of which ethics has grown was all-powerful. Presumably woman and the young of slaughtered or captured animals came early into relations with each other, and some of the 'taming' of the 'gentler sex' was accomplished through the domestication of creatures lower in the scale of animal being.

Instinct and Reason.—G. Bikeles, who has made a comparative study of the facts in Waitz's *Anthropologie* and Brehm's *Thierleben*, with a view to discovering what feelings and emotions are common to primitive man and to animals, concludes that the basic feelings are: Love of parents for their offspring, jealousy, attachment to place of birth, effort for social life together, sympathy, desire after power, collecting impulse, vanity, and revenge. From the vanity of animals have arisen in man honour, respect, reverence, piety and shame (from consideration of suffering affecting vanity and honour); hope has grown out of the anxiety of man for the future, remorse out of transient feelings of aversion, and justice out of blood-revenge (55).

Instinct and reason, the ways of thinking of the animal and of the man, have, according to De Mortillet, no fundamental difference, the divergence being one of degree only, not one of kind. Mathias Duval's discovery of the amœbism of animal cells and Flechsig's doctrine of association-centres promise, according to Dr Laloy, to solve the problem of the mechanism of thought in such a way as to recognise the essential oneness of reason and instinct, the greater tendency to persist and become hereditary in the associations, caused by the greater stiffness and difficulty of movement in the prolongations of the nerve-cells in animals, as compared with man, being sufficient, perhaps, to explain the difference.[1] The oneness of reason (which is only a refined form of instinct) and instinct has also been recognised by Marshall. Making the very justifiable condition that 'in no case may we interpret an action as the outcome of a higher psychic factor, if it can be interpreted as the outcome of one which stands lower in the psychological scale,' Professor Lloyd Morgan comes to the conclusion that 'the probabilities are that animals do not reason,' that their memory is 'entirely of the desultory type,' that, although they show 'sense of the lapse of time,' systematic memory is beyond their reach. Animals thus may be said to be 'without the perception of relations and the faculty of reason.' Man, who is intelligent and rational, 'has not left behind him the emotions of his animal nature; he has realised and purified them.'

And civilised man has proceeded likewise with the heritage of his savage ancestors. The demonstration and elucidation

[1] *L'Anthropologie*, X. p. 218.

of this idealisation and purification, the 'growth of the soul of man,' has lately been taken up by Dr G. Stanley Hall in connection with the 'Child Study' movement in America.

The Child and the Savage.—That the child, in many respects, resembles the savage is an idea familiar even to some of the writers of antiquity, who saw that the childhood of the race and the childhood of the individual had not a few things in common. Lucretius, Vitruvius, Diodorus Siculus, and other poets and philosophers ancient and modern, agree with Shelley, who summed up the question epigrammatically in his brief declaration, 'the savage is to ages what the child is to years.'

For Miss Paola Lombroso, whose *Essays in Child Psychology* is one of the most interesting books about the child we possess: 'The child is a little compressed, synthetic picture of all the stages of man's evolution'—an evolution which has been controlled in all its history by the same principle, 'the adaptation to life with the least effort,' the 'pulsing eurhythmia that rules all things' (369, p. 172).

In his introduction to this book Professor Cesare Lombroso speaks of childhood as a 'curious world, in which we get glimpses of primitive man—in mental development, in the emotions, in impulsivity, in the prevalence of imagination over intelligence.' Before their dear little heads, he says, 'we forget the cruelty and harshness of the age so primitive re-evoked in them, and get the impression not so much of a savage forest, as of a garden of primitive flowers which smile at us and pleasure us even when they prick us or entrap our feet' (369, p. ix.).

Thoreau, the Rousseau of New England—'the bachelor of Nature' he has been called—a man in whom the savage and the genius, the gipsy and the child, all met, was an ideal savage 'crusading the woods in perennial quest of a new sylvan Jerusalem,' and living a life so naïvely primitive, that, as one of his biographers observes, his existence almost seems 'a myth.' This great nature-lover came very near to the heart of childhood, and he has described some of its keenest delights with a master pen. He thus tells the story of the house: 'Adam and Eve, according to the fable, wore the bower before other clothes. Man wanted a home, a place of warmth, or comfort, first of physical warmth, then the warmth of the affections. We may imagine a time when, in the infancy

of the human race, some enterprising mortal crept into a hollow in a rock for shelter. Every child begins the world again, to some extent, and loves to stay outdoors, even in wet and cold. It plays house as well as horse, having an instinct for it.

'Who does not remember the interest with which, when young, he looked at shelving rocks, or any approach to a cave? It was the natural yearning of that portion of our most primitive ancestor which still survived in us. From the cave we have advanced to roofs of palm leaves, of bark and boughs, of linen woven and stretched, of grass and straw, of boards and shingles, of stones and tiles. At last we know not what it is to live in the open air, and our lives are domestic in more senses than we think. From the hearth to the field is a great distance. It would be well, perhaps, if we were to spend more of our days and nights without any obstruction between us and the celestial bodies, if the poet did not speak so much from under a roof, or the saint dwell there so long. Birds do not sing in caves, nor do doves cherish their innocence in dovecots' (638, p. 26).

The Savage and the Ignorant.—Not all students of human history and inquirers into the psychic phenomena of existing races are, however, prepared to admit a parallel between the mind of the savage and that of the child. Dr D. G. Brinton, the eminent Americanist, whose volume on the *Religions of Primitive Peoples* is the best presentation of the phenomena of religion as found among the lower races that we possess as yet, expressed himself in these terms (77, pp. 12 and 14): 'The savage state was the childhood of the race, and by some the mind of the savage has been likened to that of the child. But the resemblance is merely superficial. It rather resembles that of the uncultivated and ignorant adult among ourselves. The same inaccurate observation and illogical modes of thought characterise both.'

As serving to explain 'most of the absurdities of primitive religions,' Dr Brinton emphasises two traits, 'common in civilised conditions, but universal in savagery,' viz., the accepting of an idea as true 'without the process of logical reasoning or inductive observation,' and 'the extreme nervous susceptibility of savages.'

The comparison of primitive peoples with the ignorant peasantry of Europe, or the ignorant lower classes of other

countries, has been made by other observers as well. Manouvrier,[1] says of the Galibis of Guiana, some of whom he studied at the Jardin d'Acclimatation in Paris, that they resembled 'peasants confined in the mountains, leading a simple, monotonous life, deprived of all instruction,' and that, 'if they were to settle among Europeans, as the most ignorant French peasants do in the large cities, many of them would soon be on a level with these latter.' M. Dally [2] argues that the 'total absence of curiosity, and of demands other than those for food and drink' distinguishes them from the peasantry, who would have admired a hundred things and asked a thousand questions. It is not certain, however, that the confusion noted in these Indians is any evidence of lack of curiosity or inability to admire, when environmentally at ease. The comparison, here, lies more with the child, perhaps, than with the peasant.

Variety in Savage Character.—It has been well said of primitive peoples that 'it is as hard to know them as it is to know children,' and both are just as shallow and just as deep in their knowledge. Absolute trust, comradeship, absence of guile and overreaching, sympathy with habits, customs, prejudices and superstitions, careful avoidance of all giving offence, display of interest in the things really important to savage and barbaric life, are the pass-words by which travellers of truly scientific bent have entered into the realities of primitive man's thoughts and actions, and the same keys open all the doors of childhood. Topinard has sketched in brief outline some of the chief facts concerning the uncivilised races of man, about whom there is so much misconception abroad in the land (646, p. 520) : 'The lowest savages differ in character, disposition and manners according to the more or less difficult conditions of existence in which they are found, and according as they have more or less connection with other men, savages or Europeans, who stimulate or falsify their character. In himself, the savage is usually gentle, kind, of an easy disposition, and with a tendency to jollity. He is honest, does not lie, and attempts to do no harm either to his own people or to strangers. He is sensible to kindnesses which have been extended to him, well-wishing, and endowed with a goodly portion of altruism.

[1] *Bull. Soc. d'Anthr. de Paris*, 1882, p. 814.
[2] *Ibid.*, p. 803.

Distrustful, like animals who see for the first time a creature which they do not know, his second impulse is that of gentleness. Nevertheless, he is quick and violent in responding to impressions, and may abandon himself to regrettable acts, but he quickly regains his natural tendency and grants pardon when the offence has not been too grave. Before marriage the girls and boys come early under the sway of the sexual instinct, and yield to it neither more nor less than in our civilised countries. The savage woman is chaste and modest, although nude. Her parents carefully watch her; she will have one lover or several, or she will be debauched; if in the first case she has a child, public opinion requires that the youth should marry her and take charge of the offspring. After marriage, the couple are faithful in the same degree that they are in our modern societies, if not more so. The husband always keeps the same woman.'

The forest Veddahs of Ceylon, about whom the brothers Sarasin have recently written so interestingly, are one of the few peoples in the world who may be considered fairly primitive, and illustrate the generalities of Topinard's description; some of the milder tribes of South American Indians, African Negroes and natives of the Pacific Islands belong in the same category.

Primitive Man and Modern Savages.—An extreme view of the general character of primitive man is presented by Mr Talcott Williams in his paper 'Was Primitive Man a Modern Savage?' Mr Williams (684, p. 542) questions the common opinion of the 'progress of man as beginning with a savage—bestial, degraded and repulsive, lower than the lowest now known—passing upward through incessant centuries of savage warfare in which each worse stage has been succeeded by a better, all finding their reflex and counterpart in the grim and bloody record of the anthropologist, which has in it many savage infernos, but no primeval Eden.' It is a mistaken idea, so Mr Williams thinks, to hold that 'the savage of the youth does not materially differ from the savage of the maturity of the race,' and that the lowest savage of to-day represents the earliest savage of the past, that 'the modern savage explains primitive man.' The condition of many of the savage peoples to-day is largely due to pressure, and often to the contiguity of civilisation, and to these 'both the savage and the barbarian owe their worst qualities.' The Polynesian suffers from 'the

pressure of exiguous insular territory'; the Malaysian from 'hostile inter-tribal pressure stimulated by the ease of water-communication in an island and tropical world'; the Eskimo from 'Arctic pressure,' etc. According to Mr Williams, 'Peace, not war, would be the normal condition of these antecedent communities in which the flower of savage life was setting into barbarism, and slowly fruiting into civilisation.' The earliest culture caught its tone from peace, and no era of conquest had yet appeared, and communication was probably freer than in later epochs of war and conquest. Much is signified by the fact that 'everywhere the war-god is the younger god, not the older, as perpetual war would have made him.'

Doubtless, Mr Williams has drawn a picture of the earliest men which, except in so far as war is concerned, will not meet with the approval of many modern anthropologists, still less with that of those who, holding to the parallel of the individual and the race, seek to explain all the pugnacity and the 'fighting instinct' of childhood as inheritances from a primitive era of continual warfare and intertribal, interfamilial, inter-individual struggle.

Dr D. G. Brinton [1] rejects Mr Williams's views, with the declaration that the 'author is about a century behind time, as every student of the actual remains of earliest man knows the painful and irrefutable evidence of his worse than barbarous, his really brutal condition, apart from all comparisons with modern savages.'

There is much truth in Dr Brinton's contention, which is the view of those who do not, with Major Powell (505, p. 103), deny the progress of humanity from militancy to industrialism, from perpetual warfare to more or less stable peaceful activity. Major Powell and his school reject the theory that 'savagery is a state of perpetual warfare; that the life of the savage is one of ceaseless bloodshed; that the men of this earliest stage of culture live but to kill and devour one another; and that infanticide is the common practice.' War itself, has, like all other human institutions, 'developed from very lowly beginnings to an advanced stage of organisation.' Social growths preceded the advance from the bow and arrow to the Gatling gun, from the stone club to the Mauser rifle, from the canoe to the modern battleship; great wars were posterior to great

[1] *Science*, N.S., IX. p. 38.

peoples. The wars of savagery were but small interruptions of pursuits of peace, and probably no wars of barbaric peoples the world ever knew were so destructive or carried on on so large a scale as have been some of the wars of civilised nations. The theory of evolution, and man as an intellectual animal, may be held to predicate, for the earliest known world of human beings, group upon group of savages, scattered over all the habitable earth, out of whose peaceful efforts the beginnings of art, science and religion arose, and from whose clashings and combinings in later ages the peculiarities of the first civilisations and their successors were produced.

Mental Character of certain Primitive Peoples.—Mr Curr's estimate of the Aborigines of Australia is as follows (136, I. p. 42): 'The mental characteristics of the blacks are worthy of notice. The black, especially in his wild state, is quicker in the action of his mind, more observant and more self-reliant than the English peasant, but less steady, persevering and calculating. His mind in many respects is that of a child. In our aboriginal schools it has been found that the pupil masters reading, writing and arithmetic more quickly than the English child. He will also amuse himself with reading stories as long as he is under the influence of the whites; and avail himself of his writing to correspond with his absent friends. He also shows a liking for pictures, with which he loves to adorn the walls of his hut. At this point, however, he stops, and, instead of advancing, it is doutful whether he will fully maintain through middle age what he learnt in youth. In most respects it is clear that the savage *cannot be raised to the level of our civilisation in a single generation;* but there are no grounds for supposing that he would not continue to advance from generation to generation with continuous cultivation.'

Concerning the natives of the Andaman Islands, Mr M. V. Portman says[1]: 'One often hears the English schoolboy described as a savage, and after sixteen years' experience of the Andamanese, I find that in many ways they closely resemble the average lower-class English country schoolboy.'

Keane (322, p. 44) cites with approval the statement of Captain Binger concerning the West Sudanese: 'The black is a child, and will long remain so.' As will be seen later, all these statements need qualification.

[1] *Journ. Anthr. Inst.*, XXVI. p. 369.

Of the Passés Indians, whose 'industrious habits, fidelity, and mildness of disposition, docility, and, it may be added, personal beauty, especially of the children and women,' made them very attractive to the Portuguese colonists in the region of the Amazons, Mr H. W. Bates tells us (42, p. 299), that 'had the ambition of the chiefs of some of these industrious tribes been turned to the acquisition of wealth, probably we should have seen indigenous civilised nations in the heart of South America similar to those found on the Andes of Peru and Mexico.' The teachability of these Passés is seen from the readiness with which they have adopted many customs and notions of the whites.

Another 'fundamental defect of character' in the Amazonian Indian, besides the communistic idea of property, is the absence of 'any notion of domesticating any animals for use as food,' a notion which, even under the influence of civilisation —they have taken to the hen, but not well to the ox, sheep and hog—seems to come hard to them. This 'defect in the Indian character,' according to Mr Bates (42, p. 99), is due to the 'domination of the forest,' which has held these native races back from progress towards civilisation.

Of the Orang-kubus, who dwell in the marshy, forested region in the north-west part of Palembang, Sumatra, Captain Zelle tells us (694, p. 27) that they are one of the most primitive peoples in existence, although, so far as character and general behaviour are concerned, they rank higher than the Battas, who are much more highly civilised; here, as in certain other cases, cannibalism is found with the more civilised tribe. Indeed, as M. Zaborowski says (694, p. 34), anthropophagy is hardly a primitive custom, since 'it requires the development of considerable social inequality to permit certain men to consider other men as a species of game.'

One might also refer to the Maoris of New Zealand, who, at the beginning of the present century were fierce cannibals, but have now six representatives in the New Zealand Legislature, and evidence abundant powers of adaptation and improvement.[1] The native members of both branches of the Legislature, we are told, 'take a dignified, active and intelligent part in the debates, especially in those having any reference to Maori interests,' and Mr Kidd is led to remark concerning this people (325, p. 293), 'though they are slowly disappearing

[1] *Nature*, 1897, p. 433.

before the race of higher social efficiency, with which they have come into contact, they do not appear to show any *intellectual* incapacity for assimilating European ideas, or for acquiring proficiency in any branch of European learning.'

Professor Blumentritt's recent studies of the Tagals and other Malays of the Philippines show the very great native ability of this stock, which has produced poets and men of science like Rizal, *littérateurs* like Luna, painters and artists like Resureccion Hidalgo and Juan Luna, besides lawyers and physicians in abundance, and gold and silversmiths, wood carvers, etc., of a high order of merit. The Malay peoples of Java and Sumatra, to say nothing of their congeners in Madagascar, have produced men and women who certainly do not suffer from comparison with the average of the Aryan or Semitic races, while not a few of them would take very high rank even there.

Many primitive peoples, like some of the American Indians, the Aëtas of Luzon, the Kruman of Liberia, the Bushmen of South Africa, certain Australian tribes, etc., while capable of absorbing a great deal of the culture of the white race, feeling the lack of their old *milieu*, with its social advantages, weary of the new civilisation and fade away individually and racially. It is not incapacity for civilisation so much as dislike for it and love of the old that cause so often the abandonment of the newly-acquired culture by the ex-savage or ex-barbarian. Such relapses as that of the Aëta educated by the Archbishop of Manila; the Brazilian Indian, who graduated from a medical college; the young Kruman cited by Dr Barret; the Fuegians of Captain Fitzroy, etc., have been assigned an exaggerated importance in race psychology. In reality, the Robinson Crusoes, Pitcairn Islanders, hermits and relapsed ones of the great civilised races outweigh these and call for more explanation. Primitive peoples under the exact rule of our culture, young country recruits in the barracks, and school-children have much in common; nostalgia and the melancholy phthisis that follows get a hold upon them, because, as Dr Lasègue has said, 'discipline, narrow subordination, impose upon them constantly depressing unrest and restraint.' Zaborowski, who cites Lasègue, compares with the recruits, who, besides the conscious remembrance of their lost liberty, are under the pain of a new *régime* and a new *milieu*, the school-children of the present day, who, 'intensely over-driven, come to present

the same symptoms of depression.' A savage, a soldier, a lover, a child best of all, knows what it is to be homesick, and to feel that loss of liberty which makes life scarcely worth the living, and for which all the 'advantages' of so-called civilisation are but a mean compensation.

The Savage, the Child, and the Insane.—That the mind of the savage must be characterised as insane is a view held by not a few recent writers, who are represented by Dr Friedmann, when he says[1]: 'The state of primitive thought is nothing more nor less than insanity, and has its parallel only in our asylums for mental diseases.' Reasoning by analogy, confusion of the real and the ideal, word-plays and figurative language are, however, even now too common normally among all races and conditions of men, to be regarded as evidences of an unsound mind. That the whole earth was once peopled by lunatics is a theory which the arts, the inventions, the institutions, the language of even the lowest races of mankind render absolutely untenable. No mere psycopath laid the foundations of astronomy, invented the boomerang, or changed the wild grass into the beautiful Indian corn. The earliest peoples, like so many normal individuals to-day, may have resembled the lunatic without sharing his lunacy, just as they have approached the genius without possessing his intellect, in both which respects they are nearer the child.

In his volume on *Sanity and Insanity* (423, p. 122), Dr Mercier says: 'A man who is unable to count above 5, who walks about naked *coram populo*, adorning his person only with feathers and tawdry ornaments, would ordinarily be called insane; but if he has a black skin, and lives on the banks of the Congo, he is considered an average specimen of normal humanity.' Insane conduct, Dr Mercier tells us, 'cannot be corrected,' and conduct he defines as 'the adjustment of the organism to the environment.' With this understanding, the savage is in no wise insane, even though insanity and kindred forms of mental disease may prevail, as some authorities maintain, more commonly among savages and barbarians than among the higher races, and many of the comparisons and *rapprochements* instituted by the Italian schools of criminology and psychiatry, fall to pieces upon close examination. To a very great extent the same may be said of the parallel sought to be established, *e.g.*, by Dr Clifford Allbut, between

[1] *Science*, N.S., IV. p. 357.

the mentally diseased and the normal child—the view that the child is practically in an insane state of mind, though of a somewhat primitive sort. For Dr Allbut, children 'have in primary forms, what in complex and derived forms is the insanity of adults,' and the imagination of children is 'the vestibule of the insanity of adults.' But these writers exaggerate the danger of 'the fairy dreams and pretty fancies of childhood,' their confusion of the real and the unreal, their seemingly absurd conceits of thought and expression. The child, who, never having seen such things before, but familiar with that wherewith she compared them, called a pot of beautiful fresh green ferns 'a pot of green feathers,' was far from being insane, making the very best use possible of the environment. So with many of the seeming quaint and curious observations of children recorded by Hartmann, President Hall, Professor Brown, Professor Russell, and others who have studied 'the contents of children's minds,' 'the thoughts and reasonings of children,' etc. The law of evolution is being illustrated here instead of the unlaw of chaos.

In a very suggestive article on 'Folk-Lore in Mental Pathology,' Dr Eugenio Tanzi, of Genoa, after discussing the general characteristics of persecutory delirium, panophobia, personification, religious delirium, delirium of ambition, erotic, hypochondriac delirium, logolatry, name and number prejudices and manias, paranoia, enigmas, conjurations, nomadism, incoherent episodes, double personalities, hallucinations, etc., comes to the following conclusions (626, p. 418):

'1. Delirium is determined by the apparition and the hegemony of given images and tendencies which are summed up in superstition and acquire the character of an ideative monospasm. 2. Like images and tendencies are met with as sole and uncontrasted manifestations of the intelligence in primitive man; and they are inherited, but enfeebled and latent in more developed man. 3. Between the group of these primitive ideas and that of the more recent ideas there is in the complete and developed man a disparity of energy and an antagonism of function quite to the advantage of the latter. 4. The clinical genesis of delirium—whatever it may be—consists in the victory of the superstitious tendencies, which assume the upper hand. This modifies the type of intellectual constitution, which, developed and savage at one

and the same time, degenerates into a real caricature and bears in its deformity the stamp of morbid origin. 5. The supremacy of the superstitious tendencies is effected in the paranoiac by a congenital prevalence of development, in the non-degenerate lunatic by a paralysis of the higher functions.'

Mysticism, the one thing common to the savage, the normal man and the lunatic, is the one thing which, in the differing ways it obtains among them, distinguishes them from one another, and distinguishes the degenerate lunatic from the undegenerate. 'With primitive man,' says Tanzi, 'mysticism is the little treasure of a great poverty, the best he has in his brain, the fruit and the flower of his intelligence. For the uncivilised normal man it is a fettering of conscience, that portion of it which is ready to be lost, a mnemonic survival not far from being submerged in the unconscious. In the paranoiac it is the revival of an obsolescent function, what is re-born from the ruins, the defeated, rising again. In the non-degenerate lunatic it is the wretched residuum of a disaster, the little and the worse that disease has spared.'

In other words, this mystical prejudice, diverse in its attributes, marks the brains of all men. In the savage it is monarch of all; in the normal man it is reduced to a state of servitude,—a poetic tendency, or an accessory diversion of thought; in the lunatic, either in its own strength as a victorious rebel, or by reason of paralysis of the opposite tendencies, as a last superstition, it becomes again the sovereign.

The child, too, has parallel states of mind which are clearly seen in the phenomena of delusions and illusions, fads and fancies, questionings and dogmatisings, nonsense-talk, language-play, verbigeration, etc. Hallucination furnishes an interesting *rapprochement:* 'Children would not participate with such vivacity and interest in the fictions which constitute their games, if, in playing, they were not semi-hallucinated.' And primitive man likewise.

The paranoiac, the child and the savage all vivify nature; 'with them,' to use Tylor's apt expression, 'anything is somebody'; every fact is a deed, nothing is authorless; the dead are more alive even than the living; night is no whit less empty than day, sky and sea than mountain and forest. Pride and morbid ambition also link together the paranoiac, the savage and the child. Tribe after tribe call themselves 'men,'

'the people'; the paranoiac is 'Pope,' 'Emperor,' 'God'; children run through a gamut of higher personalities. The cult of the word, logolatry, verbigeration, neologism are common to child, savage and lunatic. The paranoiac has a delirium of speech; many savage tribes lack general terms for elementary things, but revel in a wealth of synonyms, doublets, specifying words, etc., and verbs whose conjugation contemplates all positions and attitudes. Children 'divert themselves with mere words, rhyming them, singing them, careless of their nonsensicalness. They invent words through very pleasure of verbigerating.' In like manner 'races in their childhood, in the new delight of speech, neologise without regard to use or necessity, impoverishing their language by making it plethoric of synonyms' (626, p. 404).

Name-superstition is another thing that belongs to the psycopath, the child and the primitive races of men. In the names of self and of other beings the magic and the mystery of the word linger long. The child, the savage and the paranoiac love many names, like to change them, conceal them from strangers, etc. In his study of the neologisms of the insane, Tanzi comes to the conclusion that delusive ideas are innate, and formed for primitive peoples the highest expression of their normal thought, receding later with the growth of culture and intellectual development. This view of the inheritance of delusive ideas is not commended by Roncoroni.[1]

Le Bon has little opinion of the reason and logic of children and primitive man. 'Let one try by reasoning,' he says (351, p. 132), 'to convince primitive minds—savages and children, for example—and he will realise the feeble value possessed by this method of argumentation.' Speaking of the child's failure to distinguish between the reason of an act and its form, Guyau observes (351, p. 38): 'This confusion of reason and form exists in a not less striking degree among savages and primitive peoples. And it is upon this confusion that is based the sacred character of religious rites.'

Tarde, in his 'Social Logic,' notes many resemblances between the savage and the child in matters of feeling, belief, individual and social action. Children and savages seem always to have some fixed idea, some 'subject of privileged preoccupation,' and civilisation (like education) is often

[1] *Rev. Sperim.*, 1890, p. 33.

impossible without an 'attenuation of beliefs.' Perhaps the greatest belief or faith of primitive man is language itself—*numina nomina*—though Tarde goes a little too far when he declares that 'the Bas-Breton speech has done more to hinder the assimilation of Brittany to France, than Christianity to aid it, (631, p. 11). Savages and children are alike again in their tendency to 'receive all sorts of ideas, of entirely heterogeneous origins, without thinking of making them harmonise one with another in the least.' The imagination of children is diverse like that of the primitive races of men, but all have borrowed largely from 'the Eden of dreams and the Hell of nightmare.' Tarde is not quite fair to the American Indian, when he thus sums up the imaginative nature of the savage: 'The Negro is imaginative but incoherent; he combines rather than co-ordinates his thought. The Redskin has more sequence in his ideas, but has fewer of them. The Polynesian, superior to both, is already capable of systematising, dramatising, organising.' With respect to attention: 'Prehistoric man, like the savages of to-day, and like children, must have been, when intelligent, very spontaneously attentive to articulate sounds, and, consequently, very well endowed for invention as well as for linguistic imitation (631, p. 80).

Will and Personification.—The statement of Ribot (536, p. 303) that 'for primitive man all is animate, full of arbitrary caprices, of desires, of intentions, and, particularly, of mysteries, because everything is unforeseen; it is the reign of universal contingency,' is hardly justifiable in the light of the best and most recent studies of savage and barbarous life.

The savage's sense of will has been well described by Dr D. G. Brinton[1]: 'To the primitive man, as we know him, the sense of individual power, that which metaphysicians call "free will" was very present. The strong, the mighty, was what excited his admiration above all else. His ideal was the man who could do what he wished or willed to do. The savage acknowledges no theoretic limit to the will any more than does the religious enthusiast. It can move mountains and consume rivers. It can act at indefinite distances, and its force is measureless. In the religion of ancient Egypt, the highest gods could be made to serve the will of a man did he but use the proper formula of command.'

No better psychological essay has been written for some

[1] *Science*, N.S., IV. p. 488.

time than Miss Alice Fletcher's 'Notes on Certain Beliefs concerning Will Power among the Siouan Tribes'—a paper full of most suggestive facts, and a good antidote to much of the writing about primitive people to be found in many modern psychologies. It bears out much of what Dr Brinton has said. Like men of our own race, the Indian was conscious within himself of the power or will that permeated the universe. The 'other-selves,' which primitive man, like the child, knew, possessed this will or power, 'dim or clear,' according as they were inanimate things, or men or gods. There is logic in what so many metaphysicians have chosen to term the illogic of the savage and the child. Both, at least, unified all nature by personifing it.

Biese, in his *Philosophy of the Metaphoric* (54), discusses in great detail the parallel between the thought of the childhood of the individual and the childhood of the race, in so far as the personification of all nature and the animating of the inanimate are concerned. In savagery and modern philosophy, in barbarism and the highest religions, in no-culture and in all-culture, we find more or less evidence of belief in the ensouling of everything in the universe. The fancy of our children, the words of our lexicons, the myths we have not yet forgotten, the religions we profess, the art we preserve, the architecture we imitate, painting, sculpture, music, poetry, the philosophy of the metaphysicians and of the ignorant common people, bristle even yet with metaphors that tell the same tale. And when children and primitive peoples take these things for realities,' says Biese (54, p. 116), they are not utterly deceived. The child's instinct, the savage's *naïveté*, the wisdom of the genius and the philosopher are one—the universe really is animate, ensouled, and man could not do otherwise than think it so. This ensoulment of all is the first unitary thought of mankind. In fact, the play of fancy foreshadows the reality of experience.

Not quite of the same sort is the opinion of Perez, who speaks of (486, p. 191): 'A primitive confusion which the child and the savage would make between the animate and inanimate. This confusion exists less still with the young civilised individual than with the savage of to-day.' Most of the philosophical writers have, indeed, dismissed the question with much less attention and inquiry than even Perez has devoted to it.

In her chapter on 'The Child's First Ideas,' Miss Lombroso observes that 'these ideas are very imperfect, not because his method of reasoning is imperfect, but just because the child judges rationally according to the data furnished him by his experience' (369, p. 44). Thus 'when the child and the savage think the echo the voice of a human being, the image in the mirror a person, attribute life to a straw that moves, believe that God is warm or cold, or ask where the water goes that is evaporated, they are not putting forth unreason, for they do not know, they cannot imagine, a series of causes and effects different from those which they observe every day.' Later, with the observation of many more things and facts, 'reasoning and the critical sense of things develops in them.' So also with other imperfect judgments of children. Their imperfect and absurd ideas about time and death 'are important to know, because they lie close to the beliefs of savages, and so give the explanation of primitive religions, shedding light also upon childish morals, upon that indifference to the loss of a loved individual, which we take to be insensibility, whereas, in truth, children, having no idea of death or of separation, cannot feel the pain we do from these events.' With the child, indeed, its reasoning is 'the result of all the factors of its intellectual life, and furnishes the way to find the *incognita* of its mental progress' (369, p. 58). Much of the seeming incongruity of the savage's ideas, as of that of the first ideas of the child, is, in a sense, perfectly normal and natural, and arises from associations apt and fitting for the individual concerned. The recent studies of Ziehen and Ament have thrown much light upon the problems of the association of ideas in children; a good study of the idea-associations of primitive peoples is yet a *desideratum*.

Suggestion.—Guyau considers that the state of the child at the moment of birth is comparable to that of a hypnotised individual—both are characterised by the same aïdeism (absence of ideas), or the same passive monoïdeism (domination of a single idea). All young children, moreover, are hypnotisable, and easily hypnotisable, remarkably open to suggestion and auto-suggestion. Further, 'all that the young child feels is a suggestion, which will give place to a habit, propagated sometimes throughout life, as one sees perpetuated certain impressions of terror inculcated into children by their nurses' (259a, p. 16).

Dr Thomas, in his study of 'Suggestion' (636, p. 17), observes: 'If the child, more than the man does, yields so easily to all the suggestions of example, obeys sometimes the least impulse, it is because his power of reflection is still very feeble, it is because he has no marked personality, no profound habitudes, no fixed rules of conduct capable of orienting his life.' Not so true, however, is the statement which Dr Thomas makes concerning primitive man: 'The lower races resemble the child in this respect. The Fuegians, for example, have, if we are to believe the accounts of travellers, an aptitude for imitation so marvellous that they reproduce spontaneously the gestures of persons who speak to them.' Not all lower races are so characterised at least.

A further comparison Dr Thomas ventures with the mentally and physically defective: 'The same facts, more or less attenuated, it is true, may be observed in the case of feeble minds, in the case of those who possess an organisation sickly, excessively impressionable, and suited to receive all imprints. Hence the mobility of their character; hence, also, the absolute empire which certain persons have over them.'

But here, as elsewhere, the normality of the savage, the immaturity of the child, the defect or degeneracy of the adult, interfere with the parallelism of the psychic facts. Many of the most interesting facts connected with the subject of hypnotism and suggestion among primitive peoples may be read in Dr Stoll's valuable treatise, where the limitless *rôle* of suggestion among the lower races of men is fully exploited.

Imitation.—The vast importance of imitation and its *rôle* in all the activities of childhood and adult life have been emphasised by all philosophers. Gustave Tarde, in his very suggestive volumes on 'The Laws of Imitation,' 'Social Logic,' etc., and Professor J. Mark Baldwin, in his *Child and the Race*, have very recently discussed the subject in masterly fashion.

'Whenever there is question of contracts, services, constraints,' says M. Tarde (628, p. vii.), 'we have to do with imitation. When man speaks, prays, fights, works, carves, paints, versifies, he does nothing but make new examples of verbal signs, of rites, of sword-blows or gun-shots, of industrial or artistic processes, of poetic forms, of models—in a word, objects of his imitation, spontaneous or obligatory, conscious or unconscious, voluntary or involuntary, intelligent or sheepish, sympathetic or odious, admiring or envious, but imitation

always. It is the best touchstone for distinguishing what is social and what is vital. All that man does without having learned it by the example of others—walking, crying, eating, loving even, in the grossest sense of the term—is purely vital; whilst walking in a certain way, in gymnastic step, waltzing, singing an air, preferring at table certain dishes of one's own country, and behaving there properly, courting according to the taste of the day a fashionable woman, all this is social. The inventor who inaugurates a new species of action, such as weaving by steam, telephoning, moving a carriage by electricity, performs himself a social work only in so far as he has combined old examples, and in so far as his combination is destined to serve as an example itself.'

In another interesting volume M. Tarde takes up the brief of the other side, and in 'Universal Opposition' has written of the rivalries, contrarieties, controversies, debates, contests, struggles, wars, destructiveness, spoliation, antitheses, contrasts, dissonances, contra-similitudes of all sorts, which seem to make in all stages of physical, vital, mental existence an eternally defiling succession of pairs of contraries, an endless war, an everlasting Manichæan day. The relation in which opposition, properly understood, stands with respect to sympathy, peace, solidarity, federation; love, goodness, harmony, imitation, etc., is thus epigrammatically stated (p. viii.): 'Marriage alone is fecund, not the duel; without the inventiveness of genius, daughter of the innate sympathy of man, the social *mêlée* would certainly not have sufficed to give origin to human progress.'

'Imitation and Allied Activities' forms the subject of the first volume of the *Child Observations*, the data for which have been collected by the teachers and students of the Normal School at Worcester, Mass. Miss Haskell's volume—the interesting introduction is by Professor E. H. Russell—contains 1208 plain, unvarnished entries of child-phenomena of imitation (ages 1-3 years, 191; ages 3-4, 129; ages 4-5, 130; ages 5-6, 121; ages 6-7, 123; ages 7-8, 91; ages 8-9, 96; ages 9-10, 82; ages 10-11, 83; ages 11-12, 45; ages 12-16, 107) of all sorts and varieties, mechanical, sensory, motor, psychical, social, æsthetic, linguistic, artistic, moral, dramatic, vocal, etc.—an array of evidence which seems amply to justify the lines of Wordsworth which appear upon the title-page:

> 'As if his whole vocation
> Were endless imitation.'

These records have been charted out by Miss Caroline Frear, of Stanford University, to show the things or persons imitated, the sort of imitation, the exactness of the imitation, the persons with whom the child plays, and the proportionate imitation of action, speech, sound. Miss Frear calls attention to the fact that 'the proportion of imitation of adults (a proportion that increases with the age of the child) is far in excess of imitation of other children or of animals,' while the percentage of imitation of things 'is too slight to merit representation.' But many more studies and investigations are needed to make certain the interpretation of these results. With the years 'direct imitation' ('the more immediate, more instinctive, less voluntary, sometimes reflex, at all events impulsive imitation') decreases, while playing ('the more dramatic form of imitation') increases. In the early years imitation of action preponderates over that of speech, suggesting (the author remarks) that 'possibly in the early years too much is made of teaching language, and more attention should be given to hand and body activity,' though, here again, more data are required to make certain the point. Miss Frear notes also 'the increasing combination of dramatic speech with dramatic action, and the decreasing occurrence of playing by simple action alone.' The tendency for the child to play with adults 'is marked during the first year,' while during the next two or three years 'he is satisfied to play by himself,' a tendency which decreases, as 'with the development of the social instinct the tendency to play with other children increases rapidly and steadily,' and there are increasing numbers of groups of children playing together—a fact which, the author seems to think, 'may indicate that, while at first the child needs strong, authoritative control, yet, beginning perhaps at four, he needs more and more democratic association with his fellows, with its increased possibilities of self-direction' (219).

Taken altogether, these imitation-observations show how really human the young human being is, how far removed he is in many respects from the mere animal, how prophetic, rather than atavistic, are his actions and their goals of thought.

Miss Frear's pedagogical suggestions are as follows: '(*a*) The natural tendencies of children indicate that adaptations of adult occupations furnish healthy material for part of the activity of the kindergarten. (*b*) From the age of four or five years considerable play should be given to the free development of

children in connection with their social instincts. (*c*) In the early years of school life *action* should be given a prominent place. The formal teaching of language should be subordinate. Verbal expression should be developed spontaneously in connection with action.' There is danger, however, in too much imitation, even under the best conditions.

'The model is the death of all formative work,' says Heydner in his essay on the child-mind, for 'it is easier,' to use the words of Ansbacher, 'to make men out of children than to make children out of men.' In learning language, in coming to a knowledge of the differences between literary and colloquial speech, between written language and home-dialect, in substituting new, strange words and phrases for the old familiar ones, the child is often in the position of the adult learner of a foreign idiom. 'To marry the written language with the dialect'—so that no bastard forms are generated—is, Hildebrand remarks, one of the teacher's greatest tasks.

Taboo.—If it were possible to exclude imitation and contamination as important factors in the regulation of child-life among the civilised races of to-day, one could see in the 'bar,' of plays and games, the reserve of boys before girls, and of children of both sexes before adults, with regard to their favourite games and amusements, their pet animals and little sanctuaries and hiding-places in the garret or the forest, the cellar or the hillside, their secret languages and their treatment of natural and artificial objects, many facts permitting a *rapprochement* with practices and usages of savage and barbarous peoples all over the globe. But in childhood taboo is more of an incident or an accident than a system—due to a hundred independent causes rather than subject to one dominant idea or belief. In children we see the diverse elements, which, flowing together and becoming arrested, appear here and there all over the world as systems of 'thou shalt not'; in childhood they are still in a state of flux, the systematising force of religion and society makes them stable in savagery and barbarism. A full sense of the results (famine, disease, death, war, earthquake, floods, etc.), of the violation of the taboo, such as children do not have, but savages always can have, is necessary for the taboo *par excellence*. Barroil, whose brief *résumé* of taboo literature is very good, recognises the religious origin of the custom and its subsequent employment as a powerful social instrument in the hands of chiefs, castes,

secret societies, and other primitive clubs and associations (37).

Brinton, looking on the taboo as one of the very earliest forms of 'the word from the gods,' thus notes its gradual development in diverse directions: 'The *tabu* extends its veto into every department of primitive life. It forbids the use of certain articles of food or raiment; it hallows the sacred areas; it lays restrictions on marriage, and thus originates what is known as the totemic bond; it denounces various actions, often the most trivial and innocent, and thus lays the foundation for the ceremonial law. The penalty for the infraction of the *tabu* includes all that flows from the anger of the gods, reaching to death itself' (77, p. 108).

Mr E. S. Hartland, who has studied the taboo as it appears in fairy tales, remarks, with special reference to the sort dealing with 'swan maidens,' that 'among the more backward races the taboo appears generally simpler in form, or is absent altogether' (286, p. 325). If 'pre-social' man ever practised the taboo, he must have done so in an utterly naïve and inconsequent fashion. Investigations of the ethical contents of children's minds and children's ideas of right and wrong, such as those of Mr F. W. Osborn, who in 1894 studied some hundred boys and girls of the city of Brooklyn, from nine to eleven years of age, attending a public and a private school, and of Miss M. E. Schallenberger, whose paper embodies the results of the study of some 3000 answer papers of Californian boys and girls from six to sixteen years of age, afford us data to compare with the phenomena of the taboo among savage and barbarous races. Mr Osborn, who tells us that the child is chiefly appealed to by concrete acts, and that with both boys and girls of the age in question, obedience takes the lead over truth as a virtue, observes further (467, p. 145): 'With young children, right is what is permitted, and wrong is what is forbidden.' Miss Schallenberger says, among other things (564, p. 96): 'Young children judge of actions by their results [girls consider the why more than boys], older ones look at the motives which prompt them. If a young child disobeys a command, and no bad result follows, he doesn't see that he has done wrong.'

Some sort of parallelism holds here between the child and primitive man, as the prominent place assigned to disobedience in children's stories, and the innumerable legends of savage and

barbarous races as to 'man's first disobedience,' further indicate. In many ways the taboo is as important in the childhood of the individual as it is in the childhood of the race. It is, however, true that the children of primitive races (like the adults) are not so fond of disobeying as seem to be their fellows in civilised communities. The following statement of Mr Curr (136, I. p. 54) concerning the loyalty of the Australians to these irksome restraints emphasises what has been said above: 'Now the question is, what is the hidden power which secures the black's scrupulous compliance with custom in such cases? What is it, for instance, which prompts the hungry black boy, when out hunting with the white man, to refuse (as I have often seen him do) to share in a meal of emu flesh, or in some other sort of food forbidden to those of his age, when he might easily do so without fear of detection by his tribe? What is it that makes him so faithfully observant of many trying customs?

'My reply is, that the constraining power in such cases is not government, whether by chief or council, but *education;* that the black is educated from infancy in the belief that departure from the customs of his tribe is inevitably followed by one at least of many evils, such as becoming early grey, ophthalmia, skin eruptions, or sickness; but, above all, that it exposes the offender to the danger of death from sorcery. As to the inducements which the males of mature years had originally, and still have, for instilling such beliefs into the minds of the young, they are not far to seek, as by this course they secure themselves the choicest articles of food, as well as other advantages.'

Fear of consequences and of sorcery have declined in the last few centuries, and the child of cultured parents to-day lacks that faith in the words of his elders the child had of old, and the taboo is broken with impunity, for the punishments are not now so certain and so sure to follow from the vengeance of the injured powers.

According to Schurz (582), who has studied the 'food taboo,' the fact that it concerns much more flesh items than plant items is a hereditary phenomenon; man, like the monkey, was originally vegetarian only, and long after the passage to flesh-eating took place, the old vegetarian instinct asserted itself here and there in the pronounced antipathy to certain flesh-foods. Sociological, religious, metaphysical

reasons, however, in later times, account for the taboo of particular animals, parts of animals, etc., as it did also of course for certain plants and parts of plants. Fasting, Schurz thinks, is the reflection (part custom, part foresight) of famine experienced.

Ostracism, of which classical institution of ancient Greece an excellent account has been published by Garofalo (237), is, like the referendum, an old-time weapon of children in their play, and assuredly no politician ever felt worse over the verdict of the city that exiled him than the child over the decision of his playmates. No Greek was ever more completely ostracised by his fellows than is to-day the child who is *persona non grata* to his fellows. Street gangs can banish as effectively as ever did a Hellenic city.

At the beginnings of child-life it is the parents and the immediate *milieu* who exercise the taboo, and imitation is made to begin with life itself. The *rôle* of imitation is well exemplified in Mrs W. S. Hall's *First* 500 *Days of a Child's Life*, in reference to which Mrs K. C. Moore observes,[1] 'there is not a case on record in which the child took an initiative, or launched on a wholly independent line of action.' So, too, with the older child, even among primitive peoples.

Says Miss Alice C. Fletcher, in her interesting *Glimpses of Child Life among the Omaha Indians*: 'The Indian child is born in an atmosphere charged with the myths of his ancestors. The ceremonies connected with his infancy, his name, and later on his dress and games, are more or less emblematic of the visible forms of the powers which lie around man and beyond his volition. This early training makes easy the beliefs and practices of the adult, even to the extravagances indulged in by the so-called medicine-men' (213, p. 115).

Children's Ambitions and Primitive Ideals.—Mr J. J. Jegi, summing up the general results of the tests of some 8000 school children in New York by J. P. Taylor, in California by Miss H. M. Willard, in Massachusetts by Will S. Monroe, and in Milwaukee, Wisconsin, by himself, as to their 'hopes,' 'ambitions,' 'vocational interests,' etc., observes (315, p. 139): 'In these four studies alone we have tested about 8000 school children, and there appears to be a wonderful agreement in all of them, as well as in the many smaller groups tested, in regard to the types of occupations that are most popular

[1] *Psychol. Rev.*, 1897, p. 558.

during the earlier years of school life. The trades involving a large share of 'doing with the hands,' 'making,' as carpentry, engineering, farming, etc., are most sought by the boys, and teaching, dressmaking, millinery and housekeeping by the girls.' This result, Mr Jegi notes, cannot be due to the teaching of manual training or of sewing, for the majority of the children in question do not take either of these, even when they happen to be taught in the schools. Mr Jegi concludes that 'certainly from the age of twelve years children are making a conscious introspection of their talents, and the teacher cannot afford to neglect this opportunity for good.' Noticeable also is predominance of 'like it' as the reason assigned for the favourite occupation, even in America money influencing less than is commonly supposed.

With these ideals of childhood it is interesting to compare the facts and ideals of savagery and barbarism. The first god and the first poet were 'makers,' and the great heroes of primitive peoples have always been handicraftsmen, artificers, who fashioned things, wrought, laboured, etc. As the present writer has pointed out in his study of the 'Mythology and Folk-Lore of Invention' (108, p. 90): 'In the languages of many peoples "God" is simply "the creator, maker, fashioner, framer, builder," and the translations of the first verse of the first chapter of Genesis into primitive tongues reveal Him as the first artist in many diverse spheres of invention. As Andrew Lang notes, the Polynesian god and goddess to-day, like the classic deities of Greece and Italy, are departmental in character—hunters, smiths, potters, etc. In the legends of the Quichés of Guatemala, according to Dr D. G. Brinton,[1] "the Supreme Being is called *Bitol*, the substantive form of *bit*, to make, to form, and *Tzakol*, substantive form of *tzak*, to build, the Creator, the Constructor"; and the creation-legends of American and other primitive peoples tell of the divine artist who, like the Hebrew Jhvh and the old god of the Greeks, fashioned men (and animals) out of clay, carved them out of stone or wood, or remodelled them from existing things, plants and animals, and often taught somewhat of these arts to the first men and women.'

Primitive mythology is largely concerned with the way the gods use their hands, their carving, sculpturing, engineering exploits, on the one hand, and with the accomplishments in

[1] *Myths of New World*, 3rd ed., 1896, p. 74.

the household arts and inventions, dressmaking, etc., of the female deities, in whom is incarnated the great fact of 'woman the teacher,' as Professor O. T. Mason has so ably shown.

Sense of the Body with Children and Savages.—In the early life-history of the individual and in that of the race the body plays a most important *rôle*, as indeed the etymology of our common terms, *somebody*, *anybody*, *nobody*, *everybody*, and cognate expressions in other languages suggests, while corresponding words in which *soul* might figure have not yet appeared in pronominal form in our speech. We do, however, as several kindred languages do also, employ 'soul' in the sense of 'individual' or 'person,' and it is at least curious that perhaps its most common use is in connection with disasters at sea ('every soul perished'), since water, among so many primitive peoples, is inimical to the human soul. Strangely enough we use 'body' in the sense of 'corpse,' which last word we have limited to the meaning of 'dead body,' except in the case of its other spelling, 'corps,' which signifies 'a body of live men.'

One of the most interesting chapters in the history of human thought is concerned with the development of the power 'to believe and think with all we are, body as well as sensibility and intelligence,' as M. Jules Payot puts it (479, p. 111). When man had come to be conscious of himself, he 'created gods in his own image,' and spoke unto his fellows, 'Thou shalt worship the Lord thy God with all thy heart, and with all thy mind, and with all thy soul, and with all thy strength.' And not yet have the gods ceased to be the embodiment of man. Robinsohn, whose *Psychology of Primitive Peoples* contains a chapter on the form of the soul (539, pp. 37-54), observes: 'Even where the distinction between soul and body is accentuated strongly, the first appears in human shape.' Greek philosophy sought to refine the soul, but Greek folk-thought gave it the form of a beautiful woman or of a butterfly.

Says Professor Fullerton:[1] 'And from the crude materialism of the infant to the crude animism of the savage the step is but a short one. That duplicate of the body, which in dreams walks abroad, sees and is seen, and acts as the body acts, has simply taken the place of the body as knower and doer, and its knowing and doing obtain their significance in

[1] *Psychol. Rev.*, IV. p. 23.

the same experience. The thought of the child is duplicated in the new world opened up by the beginnings of reflection.'

Thoreau, whose vegetarianism expresses itself in the declaration that 'the human race in its gradual improvement [will] leave off eating animals, as surely as the savage tribes have left off eating each other when they come in contact with the more civilised,' says also, rather dogmatically (638, p. 214), that 'the gross feeder is a man in the larva state; and there are whole nations in that condition, nations without fancy or imagination, whose vast abdomens betray them.' Like the insects, men in their perfect state eat less than in their larval condition; the butterfly stage is not only more beautiful but less voracious than the caterpillar. Thus judged, the child lingers long in the company of the savage. A prominent abdomen is a noticeable characteristic alike of children, women, and many primitive races; a 'pot-bellied' child and a 'pot-bellied' savage are common enough. This prominence of the belly in the physical organism of man has been reflected in the vocabularies of primitive peoples. In more than one such language 'forehead' = 'belly of the face'; 'palm' = 'belly of the hand'; 'instep' = 'belly of the foot'; 'inside' = 'belly of the house.'

In terms of bodily names men and women are lower in the scale of being than they are from the point of view of comparative anatomy or psychology. The prominence of abdomen and stomach, the parallelism of hand and foot, lingered longer in language than in the person of man himself. Here, too, physical evolution has often run far ahead of psychical evolution—names are much more conservative than the things they designate. And the terminology of primitive peoples is not seldom remarkably similar to that of the children of to-day. We yet lack a study of the names of the organs and parts of the body, though here and there in a few extra-European languages the beginnings of such research appear.

In counting especially, with primitive peoples as with children, the body and its organs are utilised—repeated perhaps in some of the counting-out games and lullabies of the nursery and playground. Some of the lower races employ almost all the members of the outward body in their systems of enumeration. The Murray Islanders, of Torres Straits, New Guinea,[1] *e.g.*, who are said to possess but

[1] *Journ. Anthr. Inst.*, N.S., I. p. 13.

two numerals (*netat*, 'one,' *neis*, 'two'), count higher than that by reduplication, and can reach 31 by reference to certain parts of the body. They begin with the little finger of the left hand, enumerating the various fingers, the wrist, the elbow, the armpit, the shoulder, the hollow above the clavicle, the thorax, and then down the right arm in similar reverse order to the little finger of the right hand—this, together with the ten toes, giving them the sum required.

Counting.—Fingers and toes the savage and the child count with *ad libitum*, and the parallel between the two is very interesting. Professor Levi L. Conant, in his exhaustive study of the origin and development of number-expression, speaks thus of finger-counting: 'But the one primitive method of counting which seems to have been almost universal throughout all time is the finger method. It is a matter of common experience and observation that every child, when he begins to count, turns instinctively to his fingers; and with these convenient aids as counters tallies off the little number he has in mind. This method is at once so natural and obvious that there can be no doubt that it has always been employed by savage tribes since the first appearance of the human race in remote antiquity. All research among uncivilised peoples has tended to confirm this view, were confirmation needed of anything so patent.'

The 'invariable exception' crops out, however, for the author goes on to say: 'Occasionally some exception to this rule is found, or some variation, such as is presented by the forest tribes of Brazil, who, instead of counting on the fingers themselves, count on the joints of the fingers.

As the entire number-system of these tribes appears to be limited to *three*, this variation is no cause for surprise (124, p. 7).

As to method in finger-counting, Dr Conant fails to find any markedly uniform law of beginning either in children or in the civilised, but 'very young children have a slight, though not decided, preference for beginning with the thumb,' and 'more civilised people begin with the little finger than with the thumb.' Savages, however, 'nearly always begin with the little finger of the left hand' (124, pp. 11-14).

Out of 206 children examined in the five different primary rooms in the public schools of Worcester, Mass., 57 began with the little finger and 149 with the thumb—a result the significance of which is reduced, the author thinks, by the fact

that 'children of this age, four to eight years, will count in either way, and sometimes seem at a loss themselves to know where to begin.' Imitation also is an important interfering factor. With age the tendency of young children 'to hold the palm of the hand downward, and then begin with the thumb' disappears, and 'at the age of twelve or thirteen the tendency is decidedly in the direction of beginning with the little finger. Fully three-fourths of all persons above that age will be found to count from the little finger toward the thumb, thus reversing the proportion that was obtained in the primary school-rooms examined.'

Another interesting point brought out by Professor Conant is the fact ('the outgrowth of the universal right-handedness of the human race'), that in finger-counting, 'whether among children or adults, the beginning is made on the left hand, except in the case of left-handed individuals; and even then the start is almost as likely to be on the left hand as on the right.' The thumb-preference in early childhood may possibly be due to the early acquaintance with that member of the hand when the child is in the 'thumb-sucking period.'

Child Ideas and Primitive Mythology.—The thoughts and questionings of the growing self in the child may well be studied in connection with the primitive cosmologies and mythologies, the developing consciousness of the race compared with that of the individual. Among the many questions asked of themselves or of others by young children, as reported by President Hall in his suggestive paper on the sense of self in children, are the following, which might readily enough stand as texts for many of the myths and tales of savage and barbarous peoples (275, p. 364): 1. Why do we breathe? Do animals, plants, God, etc., breathe? What is breath? 2. How could I get out of my skin? How would I look if I were out of my skin? Could I get out of my skin and another get in? 3. Why am I John or Henry? How funny it would be if I were Edward or Robert! 4. Is it real, or am I dreaming? How do I know it's real? Am I real, or only make-believe like dolls? 5. Why can't I see myself think when I close my eyes? What do I do when I think? What is it makes my legs walk? 6. Why am I the same as I was when a baby? What makes me the way I am? Why am I not she, or why is not he me? If papa had married B., whose girl would I have been? What name would I have had if C. had been my mother? 7. Why

was I not M. (another girl born the same day)? 8. Am I not a dog straightened out? What was I before I came into the world? You wanted a boy, but did not know it was going to be me. I am glad it was papa who found me before anyone else, for they might have changed me. 9. Why are we in the world, anyhow?

Here we have a matrix out of which might easily come the observation-myths and explanation-myths of the American Indians, the *Pourquoi* of French folk-lore, and a mass of similar primitive human thought all over the world. Egger exaggerates, however, when he writes: 'In the pupils of seven or eight years we have beneath our eyes a Hindoo of the Vedic age, a Greek of the time of Homer, a Hebrew of the time of Moses' (181, p. 93).

The following sayings and phrases of children, recorded in the Russell-Haskell collection, are in type and character such as to invite comparison with the frame-work of the folk-lore and legends of primitive peoples all over the globe (291, pp. 19, 29, 35, 21, 23, 19, 42, 44, 46, 136):—

1. [5 or 6 yrs.]. Jennie said, 'What makes people sleepy?' Hilda replied, 'Those little hairs on your lids. Every time they come against your eye, they make you sleepy.'

2. [3 yrs.]. When the hot water faucet is first turned on, the water spouts out in jets. S. was in the kitchen when her mother turned on the hot water, and she exclaimed, 'Oh, mamma, the water is choked; see how it coughs!'

3. [4 yrs.]. J., seeing the water running in the gutter, exclaimed, 'Oh! the water is awake now; it was asleep last night.'

4. [5 yrs.]. Mabel and her mother were walking in a pasture. They came to a very crooked tree, and Mabel said, 'Oh! see that tree sitting down!'

5. [11 yrs. 5 mos.]. *E.* 'Oh! sir, they've plastered that tree (meaning a white birch). *I.* 'What makes you think so?' *E.* 'Because when I rubbed my hand on it, the white comes off on it. See! There's a limb that's black, where they forgot to plaster.'

6. [2 yrs. 8 mos.]. The first time F. noticed the moon it was full. Soon after, she saw it during the first quarter and ran to her mother, saying, 'Oh, mamma! G. [her little brother] has meddled with the moon.'

7. [4 yrs.]. S. and I were sitting out of doors one evening,

and S. happened to see the moon come out from behind a cloud. 'See, see,' she cried, 'the moon has waked up.' The next evening was cloudy, and, as we were standing by the window, I said, 'Where is the moon to-night, S.?'—'Oh!' she replied, 'it is asleep, and hasn't waked up yet.' Then, after a pause, 'I guess it's tired to-night.'

8. [5 or 6 yrs.]. L., being asked one cloudy day what made the sky so grey, answered, 'Ashes.'

9. [5 yrs., 11 mos.]. *Child.* 'I know what makes the sky; it's the smoke.' He had been riding in the cars, and noticed the smoke rising from engines.

10. [5 yrs., 7 mos.]. *F.* 'Is this sponge an animal, mamma?' *Mother.* 'Yes.' *F.* 'I can see where they shot him' (pointing to one of the largest holes in the sponge).

11. [6 yrs.]. A. was away from home and was shown some ducks a few days old. She said, 'Why don't you have their feet unsewed?'

12. [6 yrs.]. I was walking along the street with J., and, as it was cold, he could see his breath. After looking at it a while he turned to me and said, 'Look! I am good, 'cause my breath goes up to heaven.'

13. [7 yrs.]. *H.* 'I think I can tell you something about animals.' *I.* 'Well, what is it?' *H.* 'I have thought what makes animals stick up their tails when men go to hunt them with a lasso or a gun. If they sticked them straight out the men could catch hold of it.'

14. [7 or 8 yrs.]. R. was looking at my geology; he finds the picture of an elephant's skeleton, and asks what that is. 'An elephant.'—'Oh! yes, an elephant without its clothes.' After, he said, 'Skin is clothes.'

15. [7 yrs. 2 mos.]. Louis said, 'This is the sun.' He stood up straight, squinted his eyes, and drew up his mouth at the corners. Then he turned round and round.

An interesting summary of the more recent literature relating to the cosmologic and cosmogonic ideas of primitive peoples, useful for comparison with such data as those cited above, is given by von Andrian (10, p. 128). The author looks upon these myths and legends as not merely 'metaphors, symbols, products of linguistic confusion, plays of an unbridled imagination, etc.,' but the first products of the necessity to explain, strongly developed even among the primitive peoples, the very real expressions, to be taken literally, of man in the

presence of nature often completely dominating his social life and colouring all other products of his mental activities. Other very valuable data for comparative study are to be found in the extended discussion of cosmological ideas, religious and philosophical conceptions of primitive peoples, published in 1898 by Dr L. Frobenius.

Orophily.—The orophily, the delight in being upon a mound, a height, a hill, and commanding the universe around, or merging oneself into it, or of looking up at the hill-tops where they seem to touch the clouds or the blue sky itself, and feeling oneself irresistibly drawn towards them—Ruskin's love of hill-scenery, Byron's high-mountain feeling, Shakespeare's heaven-kissing hill, etc.—are familiar phenomena of the psychic life of later childhood, a part, perhaps, of that 'nature-love,' which some, with Mr Hoyt, would have us consider alike the source of the rich and full mythologies of primitive people and the very vital myth-world of childhood, the inspiration of true science and true religion (306).

The height-cult (reverence and worship of hill and mountain) of humanity has been made the subject of an extended study by von Andrian, dealing especially with the peoples of Asia and of Europe (12). The author recognises two fundamental ideas as lying at the bottom of the world-wide cult of eminences, hills, crags and mountains: 1. The animistic (the mountain is alive, a being of power and might, a spirit, and his dwelling-place)—a belief which, as the unnumbered European legends of 'mountain-spirits' show, survives long even among the civilised races of man; 2. The cosmic (hills and mountains are 'steps unto heaven'; the boundary between heaven and earth; the entrances to heaven; the bearers-up of heaven; the intermediaries as to light, clouds, etc., between heaven and earth, the gods and men; the seat of heaven and the dwelling-place of the gods, Olympus; the image and symbol of the universe, the world-mountain, the earthly Paradise, etc.). The first of these conceptions seems to be the most widespread and is probably the older, while the variety of mountain-scenery and the extent and diversity of mountain-life, have permitted all sorts of connections and *rapprochements* with the mythology and folk-lore of forest and lea, fountain, lake and stream, plant, stone and beast. Many primitive peoples, like so many children to-day, have a quick eye, as their mountain-names and the incidents in their myths reveal, for the resemblances

between the form and outlines of mountains, etc., and the shape of man or beast or the various organs of either. This animistic view of the mountain stands out from beneath the superincumbent mythologic ideas of later ages as original and springing ultimately from the common animism-fund of primitive man. The cosmic concept, the author thinks, is not so widely prevalent, nor so original with the races of men, has been more frequently transferred from people to people, and more divergently developed in various parts of the world than the animistic, and also more subject to special development by particular tribes or nations. That the cosmic follows the animistic concept of hill and mountain in the evolution of the individual, as in that of the race, is very probable, although a parallelism of origin and development is not at all impossible.

Analogy.—Professor Joseph Jastrow[1] calls attention to the great *rôle* of this principle in the intellectual products of savage and barbarous peoples—omens, divination, dream-interpretation, folk-medicine, doctrine of signatures, astrology, magic arts, etc., and in the mental life of the ignorant classes among civilised peoples, together with the child as representing the first beginnings of the human race. As Jastrow remarks:[1] 'That children are fond of reasoning by analogy there can be no doubt; their confusion of fact with fancy; their lack of scientific knowledge and the ability to refer effects to proper causes; their great love for sound effects and play of words, the earnestness of their play-convictions—all these furnish a rich soil for the growth of such habits of thought as we are now considering' (313, p. 341). But the case is by no means so clear as many writers have supposed, for: 'On the other hand, the influence of their adult companions, of their civilised surroundings, of the growth of the make-believe sentiment by which the laws of the real world are differentiated from those of fairy-land, make it difficult to pronounce as an argument by analogy what may really be a half-conscious play of fancy or jugglery of words and ideas.' And these words apply to the consideration of analogy as present in the thought-products of savagery, except that in most cases the civilised surroundings have long been absent, or only recently present.

Dr Jastrow goes on to say:

'When I admit that I found extreme difficulty in collecting

[1] In his address (before the American Association for the Advancement of Science, 1891) on 'The Natural History of Analogy.'

even passable arguments by analogy in children, I must accompany the admission with the conviction that the difficulty is due to the absence of good collections of children's original and typical sayings and doings. What fond parents are apt to observe, and newspaper paragraphers to record, are sayings that amuse by a quaintness or their assumption of a worldly wisdom beyond their years, while the truly suggestive traits pass unrecorded for lack of psychologically informed observers.

'The little boy who, when asked his age, said he was nine when he stood on his feet but six when he stood on his head, because an inverted 9 makes a 6, was certainly reasoning by analogy, however little faith he may have had in the correctness of his reasoning. The children who believe that butter comes from butterflies, and grass from grasshoppers, beans from bees, and kittens from pussy-willows (Stanley Hall), may be simply misled by sound-analogies, but when Sir John Lubbock tells us of a little girl saying to her brother, "If you eat so much goose you will be quite silly," and adds that "there are perhaps few children to whom the induction would not seem perfectly legitimate," we appreciate that such arguments, so closely paralleling the superstitions of savages, may be more real to children than we suspect.'

The ever-increasing literature of 'child-study' seems to furnish much evidence tending to show that such children, by no means few in the land, are much more naïve than the barbarian or the savage.

Symbolism.—That ideas and symbols are often much slower to change than social facts and conditions is, as Ferrero points out, amply illustrated by the evolution of marriage, the story of the duel and the ordeal, in fact by legal formalities in general. The evolution of such human institutions teaches anew 'the truth that they are not created by man according to a preconceived idea and plan, or with a clear consciousness and knowledge of the definite ends towards which his activity is tending.' According to Ferrero: 'It was not the ideas of contract or of judicial discussion that, in marriage and primitive law-process, substituted purchase and judgment for capture and the duel, but purchase and judgment substituted for capture and the duel, caused gradually to arise in the human mind, by slow suggestion, the idea of contract and of judicial discussion.' Human ideas are, in fact, no more logical than other natural

phenomena; Nature herself burdens a plant or an animal for ages with a useless organ or a troublesome excrescence; she is like man, who keeps the *impedimenta* (in institutions, symbols, etc.) of dead and decadent civilisations or extinct barbarisms. The lack of logic, which many have thought to be characteristic of the child, or of primitive people, has been attributed by the philosopher Ardigò to the human race as a whole; the child is only a little less logical (often a great deal more) than his father or his mother, the savage by no means necessarily less so than the civilised man or woman (199, pp. 163-185).

The 'dangers of symbolic interpretation' have been emphasised by Colonel Garrick Mallery.[1] The cross, the numbers 4, 7, 12, the algebraic symbols, the arbitrary signs of arithmetical notation, have had read into them a world of mysticism, equalled only by some of the achievements of children, who see in letters of the alphabet and the arithmetical numbers 0-10 all sorts of animated beings and objects in nature. Dr D. G. Brinton,[2] in his study of the origin of sacred numbers, holds that 'the associations which attach sacredness to these numbers [3, 9, 33; 4, 7, 13, etc.] arise in the human mind, of the same character, everywhere and at all times, so that no theory of borrowing is needed to explain identities or similarities in this respect.' In the repetition-games and rhymes of children something of this numeral sacrosanctity inheres. With this tendency to sameness in the selection of sacred numbers by the races of men it is interesting to contrast the 'endless diversity' and 'mutual unintelligibility' of the diagrams ('number-forms,' calendar-schemes, etc.), by means of which the succession and interrelation of the numerals, the days of the week, the days of the months, the months and seasons of the year, the years of the century, the centuries of the Christian era, the letters of the alphabet, are usually recorded in the mind by many people old and young. The proportion of individuals having such forms seems to vary with nationality, sex, age, etc. Women possess them rather more frequently (in the proportion of 8 to 7), while the percentage decreases somewhat with age (adults averaging 1 in 15, children 1 in 12). The subject has been investigated by Galton, Flournoy, Patrick, Miss Calkins and others, and very recently by Dr D. E. Phillips (492, p. 507), whose article

[1] *Trans. Anthr. Soc.*, Washington, Vol. I. pp. 71-79.
[2] *Amer. Anthrop.*, VIII. p. 168.

summarises the data and theories about 'number forms,' with the addition of some new contributions. According to Dr Phillips, children have more week and month forms than adults, while many individuals have more than one form of some kind, and others have month-forms, week-forms, etc., but no number-forms. Of course, the clock, blackboard, slate, book, block, multiplication-table, chart, etc., in the school-room or at home, are often found to have suggested some of these forms, so also, perhaps, counting on the fingers and other primitive mathematical devices, but since so many children 'can count 100 before they learn to recognise anything written or printed,' the origin of very many 'number-forms' must be placed at a very early period of childhood, and their utility during school-life is often clearly apparent, although many employ them 'just as we use language, without ever thinking that they are useful as a medium of thought.' It is not certain that these forms are to be found more commonly among more imaginative or more intellectually active individuals, or among those mathematically-gifted than among other classes of people, and some of them 'may originate quite late in life, becoming much elaborated by use and time.' Dr Phillips holds that 'nearly all persons possess some idea of extension of numbers, more or less indefinite,' and asks, 'Can early association explain this tendency to cast the number series into spatial form?'—making the existence of number-forms another justification for the 'general tendency to base primary mathematics again (Euclid-wise) more and more on geometry.'

Imagination.—Long ago Plutarch wrote concerning children that they are 'better pleased with the sight of rainbows, comets, and those halos that encircle the sun and moon than to see the sun and moon themselves in their splendour,' and there are primitive peoples and portions of all civilised communities also, who, like children, are 'taken with riddles, abstruse words and figurative speeches.'[1]

The imagination of the child, according to Miss Lombroso (369, p. 149), is 'not the effect of a great intellectual energy, but proceeds rather (and it is this that characterises it) from a defect of energy, from the lack of inhibition, for which reason the thought goes by leaps and bounds, by casual associations of words and ideas.' In other terms: 'The child does not invent or create anything new and original, but, being exces-

[1] *Morals*, Vol. III. p. 103.

sively suggestionable, passes with the greatest facility from one impression to another.' This characterises his early writings no less than it does his early speech. In the writings of children at this period (5-7 years) an unbridled imagination and a clear, exact sense of observation are the chief peculiarities: 'With his new mind, burning before every fact, the child finds himself, as it were, before a new scene that excites him, sharpens his attention, and for him examining things and cataloguing them in his little head, are a sort of easy and diverting play. He observes, too, many things that escape us, with whom seeing them so often has dulled our interest in them.' Often his imagination lets him wander away on the paths of the strangest associations of ideas, and his observation becomes so minute and exact as to resemble an auctioneer's catalogue or an anatomical inventory; often, too, feeling and art are but scantily represented, being the last, in reality, to manifest themselves here. Guyau observes (259a, p. 147): 'The child retains and reproduces images much more than he invents and thinks.'

According to Andrew Lang[1] 'the early form of human fancy, the form conspicuous among backward races, peasants, fishers and children, is undeniably the source of all the civilised poetry and romance,' for 'early man, and simple, natural men and children regard all nature as animated.' Dickens, Lang thinks, shows in his genius 'a relapse on the early human intellectual condition. He sees all things in that vivid, animated way, and inanimate objects play living parts in his books more frequently than in any other modern works, except Hans Andersen's fairy tales.' Moreover, the imagination of Dickens 'at times went back to what is probably the primitive condition of actual hallucination,' and his dreams were 'wonderfully distinct and coherent.' He possessed also an 'intense power of imaginative vision and audition. He *saw* his characters, and heard them speak . . . he thought in pictures, not in words. . . . His fancy acted with the freshness of the morning of the world.'

That the genius of Lewis Carroll and Edward Lear, who have entertained so many children of both the larger and the smaller growth, lies almost within the grasp of childhood itself is proved by books like *Animal Land* (128), wherein, with the mother's assistance, are recorded the 'impossible animals,' their

[1] Littel's *Living Age*, CCXX. p. 268.

names and their characteristics of action and movement, evolved from the imagination of a little girl of four. The names: Rikka, junn, beeda, womp, jappa, melly, burkan, cattaby, pokiban, didd, booba, jinkatee, sleem, penna, modd, etc., look almost as if they might have been drawn from the animal names of some Siberian or Central Asiatic tribe. The explanation of the names and acts, however, would fail to find their fellows in the zoological mythology of any people outside of Bishop Hall's 'Mundus Alter et Idem,' or the Middle Ages. Some of them have not a little of the real child-touch. The melly that 'is so surprised and eats toffee'; the pokibans that 'eats almonds and jumps'; the ding that 'is so happy'; the burkan that 'is a nasty biting thing, and there is no more about it.' The 'atavism' of Carroll and Lear is more common than generally admitted, not appearing in print as often as it occurs.

The *rôle* of the imagination among many savage and barbarous peoples is very great. Captain Spicer, a whaler, who mingled with the Eskimo, told Professor Mason that they often make invention a part of their sport. They go out to certain distant places, and, having imagined themselves in certain straits, they compare notes as to what each one would do. They actually make experiments, setting one another problems in arithmetic (411, p. 23).

With this may be compared the question put by the culture-hero of the Micmacs, Gluskap, to the animals on the eve of man's creation: 'What would you do if you met a man?' and the familiar tests and interrogatories of our fairy-tales.

How close the savage is here to the child may be seen from the 'I'll stump you to do—,' 'let's play—,' 'say something,' 'do anything,' etc., of children's sports and games. Abundant material for comparative study might be found in the nith-songs of the Eskimo, the songs of the secret societies of the American Indians, the competitions in proverbs, verse-making, jesting, etc., of the lower classes of the people in all civilised communities, and the artificial sides of all of these as seen in the exercises of our schools at the present day. The varieties of the imagination among primitive peoples, racially and individually, are very great, probably quite as great as those noted among civilised children and adults by Queyrat, Burnham, Saint-Paul, and others who have studied the subject since Rivarol more

than a century ago noted the fact that some men in meditation seemed to hear their thoughts from a voice within them, while others read them, language for these last being a picture (26, pp. 17, 32).

A plea for the 'Hygienic Use of the Imagination' has been made by Sir J. Crichton-Browne,[1] who points out the full significance of the fact that 'idiocy is just the opposite of phantasy.' The cultivation of the imagination has been very much neglected by men of science (physicians especially), although Faraday and Darwin, Akenside and Weir-Mitchell afford examples of its fertile employment. That the stimulation and cultivation of the imagination in children can be overdone is easily intelligible; in fact, by seeking overmuch to cultivate the imagination one may give a death-blow to that naïve yet genial appreciation which is the beauty of the child's liking for poetry, that wonderful imaginative work of man. One cannot fail to have something of this feeling in reading Mr Halleck's chapters on sensory training, especially those on 'Special Sensory Training' (281, pp. 130-148), 'Cerebral Development by the Formation of Images' (281, pp. 149-170), where the author goes much further than his predecessors, Lecoq de Boisbaudran and Francis Galton, in the way of reproducing images. Such 'use of literature to cultivate imaging power' is often almost atavistic in its efforts to decompose into visions, odours, smells, sounds and movements what Milton, Shakespeare and Tennyson please us with all at once. This art the genius is wise enough to use, the child near enough to the genius to feel. This anatomy of the imagination must not be carried too far, or it becomes the veriest artificiality scorned by savage and child alike.

Nature-Feelings.—It is an all too common idea that the 'lower races' of men, like children, have little or no appreciation of the beauty and the majesty of Nature. Höffding does not hesitate to declare that 'children and savages have, as a rule, no sense for the beauties of Nature' (298, p. 266), and Ribot tells us that 'in primitive poetry man is in the foreground, Nature is only an accessory. Little of description, a few verses of epithet, suffice to create it' (536, p. 336). Psychologists see fit to date the rise of real nature-feeling from the middle of the eighteenth century so far as the masses of the people are concerned, and to credit Rousseau with being about

[1] *Brit. Med. Journ.*, Aug. 1889.

the first to arouse such a sentiment (536, p. 267). The ancient Greeks, however, and the Chinese had certainly a rather keen sense of natural grandeur and beauty, no less than had the Hebrews, while, as Biese, who has discussed the 'Development of the Feeling for Nature,' remarks, 'the nature-lyric is primitive and common to all peoples.' Concerning even Rousseau, 'the interpreter of Nature,' as he has been called, Professor Patten has remarked very recently (476, p. 455): 'Rousseau was a man of a more primitive type than the leaders of the preceding period of French thought. He had many of the characteristics of a savage, and his concept of Nature belonged to a much earlier epoch.'

Of the Zuñi Indians of New Mexico Mrs Stevenson tells us: 'Our concepts of the universe are altogether different from those of primitive man; we understand phenomena through philosophical laws, while he accounts for them by analogy; we live in a world of reality, he in a world of mysticism and symbolism; he is deeply impressed by his natural environment, every object with him possessing a spiritual life, so that celestial bodies, mountains, rocks, the flora of the earth, and the earth itself are to him quite different from what they are to us. The sturdy pine, delicate sapling, fragrant blossom, giant rock and tiny pebble play alike their part in the mystic world of aboriginal man.'

This is admirably exemplified in the Zuñi creation-myths recorded by Mr Cushing, and the Polynesian legends published by Mr Gill. In these and other productions of the primitive imagination we find the glory of the seasons, the life of beast, bird, insect, the beauty of plant and flower, the noise of running waters, the music of the sea, the rosy dawn, the starlit night, etc.

Of the Eskimo, Dr D. G. Brinton writes (73, p. 289), in his study of native American poetry: 'Some of their poetical productions reveal a true and deep appreciation of the marvellous, the impressive, and the beautiful scenes which their land and climate present. Prominent features in their tales and chants are the flashing, variegated aurora, whose shooting streams they fable to be the souls of departed heroes; the milky way, gleaming in the still Arctic night, which they regard as the bridge by which the souls of the good and brave mount to the place of joy; the vast, glittering, soundless snow-fields; and the mighty crashing glacier,

splintering from his shoreward cliffs the ice-mountains which float down to the great ocean.'

The 'Mountain-Chant' of the Navahos and the love-poems of the Micmacs and other eastern Algonkian Indians contain abundant evidence of sensibility to, and love of Nature, the former recalling at times Dante, in its majesty, the latter the love-lyrics of our own poets. In the creation-songs of the Dinkas of the White Nile and the amatory poems of the Hottentots a simplicity that is noble and convincing often appears. Everywhere we find, as Ratzel remarks (523, I. p. 49), that 'even the savage, the most prejudiced creature in human shape, the man with the least field of vision, receives an impression from the rainbow, "the bridge to the sky," from the roar of the sea, from the rustle of the woods, the bubbling of the spring.' With these impressions primitive superstition and primitive poetry work in such a way as to make it appear 'a highly superfluous question to ask if these races have a sense of Nature.' Says Dr Ratzel further (523, I. p. 70): 'Many myths are nothing but picturesque descriptions of natural events and personifications of natural forces. These bridge over the interval to science, for in them the mythology becomes, like science, the way and the method towards the knowledge of the causes of phenomena. The original object falls into the background, the images become independent figures whose quarrels and tricks have an interest of their own. Herewith we have the fable, especially the widespread beast-fable.' That some of the early Greek and Latin myths were of this character has been shown by Professor B. K. Emerson (190, p. 328), who has discussed such 'geological myths' as 'the Chimæra' (the poetry of petroleum), 'Niobe' (the tragic side of calcareous tufa), 'Lot's wife' (the indirect religious effect of cliff-erosion), 'Noah's flood' (possibilities of the cyclone and earthquake wave working in harmony). The less imposing and perhaps more quietly poetic and imaginative side of the nature-love of primitive peoples is to be seen in the proverbs, legends and folk-speech of such Oriental peoples as the Tamuls of India. It is, therefore, not altogether just when Höffding declares (298, p. 266) that, 'from the primitive practical standpoint a beautiful country is the same as a fruitful one, fruitful, that is, in corn and grass,' since not a few very primitive peoples are capable of, and do often express, a much

higher sense of beauty than that. Similarly unfair is the statement of Ribot (536, p. 187), who ascribes the alleged lack of feeling for Nature in savages and children to poverty of mind: 'The child, who has a lively sense of the possession or the deprivation of a plaything, remains insensible before a great landscape by reason of his intellectual poverty. It is a fact (notwithstanding the common opinion to the contrary) that a savage, or a barbarian even, is not moved by the splendours of civilised life, but only by its mean (*mesquin*) and puerile sides. Its grand aspects inspire in him neither desire, nor admiration, nor jealousy, for he does not comprehend them.' Among primitive peoples we not infrequently find individuals who enter into very close touch with Nature and with 'Nature's God,' and who would compare very favourably with the like characters belonging to our own race, or any other that has achieved or attempted civilisation.

Writing of a Pawnee Indian priest, whose devotion to the religion of his fathers remained unshaken amid the new environment created by the whites, Miss Alice C. Fletcher says:[1] 'His unquestioning faith in the religion of his forefathers soared far above the turbulent conditions of to-day, and gave to him a calm akin to the serenity of childhood, which was reflected in his kindly, smiling, and peaceful face.'

Mind-Content and Knowledge.—In connection with the numerous investigations of 'the contents of children's minds,' Heydner justly remarks that such analyses are often not more than half right, for, as is equally the case with primitive peoples, 'children can not be expected to tell their whole soul in the second school-year.' In all probability they know a great deal more about some one or some few things than they are given credit for, and think a great deal more about all of them than they are able to convey to their elders in intelligible form (295, p. 50). Not all the child learns and thinks in his walks through wood and mead, along river-bank and pond-margin, over hill and dale, through swamp and bog, in rainy and in pleasant weather, in summer sun and winter snow, comes to the surface when he is questioned for scientific purposes for a brief time and often under repressive or embarrassing circumstances. As little does the teacher sometimes learn of the children's real, deep ideas and imaginings about heaven,

[1] *Amer. Anthr.*, N.S., I. p. 85.

horses, shadows, the wind, railroads, Christmas, death, looking-glasses, moonshine, snails, canary-birds, etc., in the brief period of his inquisitorial office, as the new-come traveller is able to discover, in the few days of his residence among some savage or barbarous tribes, concerning their profoundest thoughts about man and nature. The childhood of the individual and the childhood of the race are pre-eminently periods of thought; concerning both we well might use the words of the poet and declare that even 'the body thought.'

The extent of the knowledge of savage and barbarous tribes concerning the animal and vegetable world of their surroundings can be seen from the statement of Professor O. T. Mason (413, p. 79), that 'in every one of the eighteen environments [into which he divides North and South America] 'mentioned in this paper the savage people know the best thing for every purpose: the best substance for clothing, the best wood for the bow, for the spear, the arrow, etc.; and it is astonishing to find what a large vocabulary exists in each one of them for different forms of animal life and different parts of the animal's body.' Professor Mason goes so far, indeed, as to declare that 'half the words of any primitive language are derived from man's association with beast-kind.'

The Maoris of New Zealand, according to Dr Hector,[1] 'had a much better knowledge of the natural history of their country than any people he had ever heard of. The older Maoris had noticed and had distinct names for nearly all their plants, not merely those that were of use; and the same names, with slight modifications, were universally in use throughout a country a thousand miles in length. They had generic names by which they grouped plants according to their affinities, in a way impossible to most people who were not educated botanists.'

The mythology, both of the Navahos (to specify but one tribe of North American Indians) and of the Maoris, embodies much of this great knowledge of plant and animal environment.

In his discussion of 'Environmental Relations in Arizona,' M. Walter Hough[2] gives the following table to illustrate 'the thorough way [there are probably not over 160 indigenous

[1] *Nature*, Vol. XII. p. 467.
[2] *Amer. Anthr.*, May 1898.

species in the environment] in which the Hopi Indians have made use of their plant surroundings':—

Employment of Plant and Tree.	No. of Plants thus employed.
Agriculture and forage (not cultivated)	13
Arts (dyeing, decorating, painting, cement, textiles, etc.)	17
Architecture (house-building)	4
Domestic life (firewood, brooms, soap, yeast, vessels, etc.)	10
Games and amusements	2
Dress and adornment	6
Folk-lore	10
Food	47
Medicine, folk and empirical	45
Religion	19
Total	173

Of the Micmac Indians of Nova Scotia, Dr Rand says, with some exaggeration (519, p. xi.): 'They have studied botany from Nature's volume. They know the names of all the trees and shrubs and useful plants and roots in their country. They have studied their natures, habits and uses. They have killed, dissected and examined all the animals of North America, from the *nestuge-pegajit* to the *gulwakchech* (from the buffalo to the mouse). They have in like manner examined the birds and the fish.'

The statement of Professor Freudenthal, of Breslau, therefore, that 'primitive peoples, uneducated Europeans and children are able to distinguish but few species of flowers' (220, p. 435), is an unjustifiable generalisation, in so far as 'primitive people' are concerned, as the evidence referred to above clearly indicates.

The following table (all peoples do not count the same number of months; some of the lists are incomplete; and many months have more than one name) will serve to demonstrate how the observations of the savage and barbarous races of men have been recorded in the names they have given to the various months, or divisions of the year, and at the same time to show the great influence of environment in determining them:—

Month-Names referring to	Haida.	Déné (Carrier).	Déné Hareskin.	Shushwap.	Kootenay.	Blackfoot.	Cree.	Ojibwa.	Lenâpé.	Onondaga.	Dakota.	Maya.	Tzental.	Cakchiquel.	Quiché.	Chiapa.	Su-Chiapa.
Animals . .	2	...	6	1	2	...	1	...	3	2	4	1	...	...	...	...	...
Birds . . .	3	...	2	...	1	...	6	...	...	...	3	1	...	3	3	...	...
Fish . . .	2	5	1	2	1	...	...	1	1	...	3	...	...	...	...	1	2
Reptiles, insects .	...	...	...	...	...	...	1	...	1	...	...	1	1	2	...	1	...
Plants, fruits (planting, harvest)	3	...	...	4	5	...	...	6	5	1	9	...	17	11	11	13	13
Weather (sun, sky, cold, heat, light, etc.) . . .	2	4	6	2	3	...	1	3	5	9	5	6	2	3	3	6	5
Human activities .	...	...	...	2	...	.	1	...	1	...	...	1	...	...	...	...	3
Religion, festivals, etc. . . .	...	...	...	...	1	...	...	2	...	...	...	9	...	1	1	...	...

The detail of some of these observations may be judged from the fact that the Ojibwa have named three successive months from the growth of berries; the Crees four months in succession (May-August) from the laying of eggs by birds, the little ones leaving the shell, the moulting of birds, and the fledglings taking to flight; the Carrier Déné four successive months (July-October) from the appearance of the land-locked salmon, the red salmon, the little trout, and the whitefish. Moreover, the Hareskin Déné have, besides their months, a division of the year into sixteen 'seasons,' all of which are named after the conditions of day and night, heat and cold, rain and snow, the condition of the ground and the water. A similar table to that given above might be made for the names of the seasons, the cardinal points, etc.

That the Indians as a class are 'incomparably superior to the average white man, or to the white man who has not made zoology or botany a subject of study,' is the opinion of Dr Washington Matthews,[1] based on his own experience in the field. 'There is a prevalent impression,' says Dr Matthews, 'that Indians are unable to generalise; and a paragraph goes the round of the ethnological treatises to the effect that the Chatas [Choctaws] have no general term for oak-tree, but only specific names for the white oak, the black oak, the red oak, etc. This impression is entirely erroneous. The Indian is as good a generaliser and classifier as his Caucasian brother. His system of classification does not fully coincide with that of the white naturalist, because his system of philosophy leads him to base his groups upon a different series of resemblances, but his arrangement is nevertheless the result of a process of generalisation.' Dependence upon the vegetable and animal world for food necessarily gave the Indian extended knowledge, made him an acute observer, and stimulated his faculties of interpretation and explanation.

Abstraction.—Very minute knowledge, and the multiplicity of very special forms of observation, may sometimes lead to an impossibility of abstraction. The system which the natives of Madagascar, as Bastian tells us, employ to distinguish (with a different word for each) the twenty aspects of the growth of the horns of oxen, may be more perfect than their numeral system, since they feel in the form a more vivid interest, and it appeals to them more concretely. Not alone do savage

[1] *Bull. Philos. Soc.*, Wash., VII. p. 74.

races differ very widely in their powers of specialisation (subject to the influence of *milieu*, social status, etc.), but in the inferences they are capable of drawing from any given exhibition or object presented, and children differ as widely in both ways. When von den Steinen showed a Bakaïrí Indian a looking-glass, the latter 'nodded calmly and said, "Water,"' and when other natives wished a sight of the mirror they said: 'Show us the "water"!' Mr B. D. Howard, on the other hand, who showed a hand-mirror to the Ainu of the island of Saghalien, reports that 'This, to my astonishment, quickly produced exactly the effect my rifle failed to accomplish. As fast as I showed them their faces, they darted like arrows to the doorway, and nothing could induce them to come back.'[1] The difference between the actions of the two savages is easily understood; the Bakaïrí had called up in his mind by the sight of the mirror the water of the river, in which possibly he had often seen his own face reflected, and was in no way disturbed by the new object, while the Ainu thought he saw his own ghost or spirit, and was inexpressibly excited and filled with apprehension. It is evidently quite often not the fact of being a savage, but the range of possible associations, that determines the reaction at the sight of a mirror, a fact which applies to children no less than to primitive peoples.

When the Hottentots, who already possessed the word *nadi*, 'mirror,' saw the Europeans read for the first time, they called a book *nadi*, adding to it for purposes of clearness, *oï'heeta*, 'for speaking'—a book was to them a 'speech-mirror.' On account of this new term the real mirror came to be designated *nadi oï'hangeela*, or 'look-mirror.' This 'mirror of speech,' *Spiegel der Rede*, is adopted by Erdmann[2] as a term worthy the consideration of modern linguistic psychology.

That abstraction is more common both among the lower races of men and with children than is usually believed seems certain, the progress from the concrete to the abstract revealing itself in the development of language, art, religion, ethics, social institutions, etc. Preyer's child's 'new papa' for 'uncle,' and the eleven-month-old boy's 'wawa' for 'dog, butterfly, trees, moving in the wind, thunder, etc.,' indicate some of the lines of thought traversed. Maennel fixes upon the sixth or the seventh year as the period in which 'first appear those abstrac-

[1] *Jour. Amer. Folk-Lore*, VII. p. 95.
[2] *Arch. f. syst. Philos.*, N.F. III. 32.

tions which are comparable to general ideas.' There are great differences individually in children in their logical processes, and many grown-up people never reach anything like logical perfection; the so-called 'apperception stages' (Ziller and Rein make 8, Vogt 3, Hartmann 6, Lange 24) are difficult of delimitation and interpretation, if, indeed, they exist at all in the fashion described by most writers of this school. In childhood (as with savages generally) the first years of life (those passed before school-life re-orients the child) are characterised, as Lange observes, by 'abstractions shaped by alternating sensual interests,' and a 'harmless *naïveté*,' which, later on, is replaced by the critical attitude. The child's first 'good' is what is accompanied by pleasant consequences, and the sudden introduction of religious ideas at this period often does incalculable harm.

'Only with the possession of language,' says Maennel, in his interesting study of 'Abstraction' (390, p. 37), 'does Nature lose her unity and break up into a multitude of centres, of beings, that are named, and, by names, furnished with individualities. Then, too, for the first time, abstraction—the simplest form, at least—becomes possible. Still individuals cannot yet be conceived as altogether sharply delimited. For sleep-life and waking life continue so to run over into each other, that the indeterminate forms of dreaming are still interpreted as real.' The child and the savage meet on this ground, some young boys and girls being as firmly impressed with the reality of their dreams as are the Brazilian Indians of whom von den Steinen writes. The influence of this divided allegiance of primitive man to sleep and waking upon the development of speech has yet to be studied. Evidently there are other 'ghost-words' than those pilloried by Skeat, the lexicographer. Maennel notes what he aptly terms 'the needless abstraction of primitive peoples'; only something striking seems to be needed to lead to the formation of strange associations bringing out ideas not longer possessed by civilised man. While we recognise the materially-minded character of savage and barbarous man (in which our children so often resemble him), we must not forget that 'primitive peoples far exceed our children, nay, even the adults of our civilised races, in the extraordinary keenness of their sense-perceptions, their wonderful attention, and their remarkable memory.'

Mivart, who holds to the theory of 'a difference in kind

between human reason and the cognitive faculties of brutes,' observes, with considerable truth: 'As folly or prejudice makes tales of animal intelligence so often quite untrustworthy, so also the statements as to the mental defects of savages are hardly less so' (429, p. 205). Thus many examples of 'what have been deemed forms of predication so low as to border on mere sensuous and animal language' turn out, when carefully examined, as logical and as intellectual as expressions in daily use among users of the most highly developed languages of the civilised world. Even to-day the Englishman or American can and does use such an expression as, *e.g.*, 'my work,' in such fashion, aided by emphasis, context and gesture, that it in no wise differs from the very primitive *ni ne* of the Grebo, an African language said to mean either 'I do it,' or 'you do not.' So it is, when we come to the statement that many primitive languages lack general terms while they have a plethora of particular names. Our possession of these general terms may be, in many ways, and on diverse occasions, an economy of speech, yet there is something in what Mivart says (429, p. 205): 'It has, for example, been objected against the intellectual ability of the Society Islanders that they have separate words for "dog's tail," "bird's tail," "sheep's tail," etc., but no word for "tail" itself—*i.e.*, "tail in general." But really the experience of the use of that word by ourselves leads us to consider the condition of these islanders in this respect to be no great misfortune. We have our word "tail" —tail in general—and it is constantly made use of in a way which is hopelessly misleading. To use the same term, as we do, for what we call the "tails" of a peacock, a monkey, and a lobster is, so far, to be in a worse plight than that asserted of the Society Islanders.' The savage is, in a sense, ultra-scientific, if not economical of names.

Conservatism and Misoneism.—The instinct of preservation in children has been discussed by Paola Lombroso. Children have 'an instinctive sense of preservation, as if they felt the fragility of their existence and clung to it with all their strength.' This is true physiologically and psychologically. Little children even have a lack of sensibility for pains, bruises, wounds, etc., that is often surprising, and their disregard of the consequences of a blow or a fall is, when they have not been pampered by too careful parents or nurses, at times most wonderful. Not localising pain very readily until two or three

years of age, they seem to resemble the savages in their resistance to physical pain and their desperate clinging to life (370). All their psychic life is controlled by the feeling of self-preservation, the least expenditure of energy—the law of least effort really dominating everything. Their speech is of the sort that costs the least exercise of intelligence—gestures, cries, pointing of the finger, and after these onomatopœic and imitative language. The bizarre associations of ideas in little children are often due, 'not to a power of generalisation, but rather to a repugnance to the effort of using new terms.' From economy of effort in conceptions it results also that all the child's ideas and images are concrete, it being much easier to seize the concrete than the abstract. Hence, also, he wishes questions to be 'clear, plain, without gaps, and well delimited'; he has a natural dislike for the vague, the indefinite, and takes long to acquaint himself with ideas of immortality, infinite space, etc. He is misoneistic and hates to have the old ways and old things changed or altered in any degree. He wants to hear the same story in the same words from the same person, and is exceedingly jealous of even the slightest alteration in his favourite tale. This misoneism serves as a means of orientation and equilibration for the child, 'preventing him from wasting his strength in too many new experiences.' He develops 'a faculty for exploiting the pleasure to be had in life and avoiding much of its pain,' and would be loved rather than love, affection being often nothing more than a mimic extravagance, mere exuberance of joy. When thoroughly abandoned to his instincts, 'the child is a little savage, passionate, deceitful, megalomaniac, boastful, etc.,' but everywhere one finds evidence of the domination of this momentous instinct of preservation and conservatism.

Language Changes.—Useful for comparison with Miss Lombroso's study of the child is Mr Edmund Noble's essay on 'The Principle of Economy in Evolution' (459), in which similar phenomena, as they present themselves in the history of the race, are discussed. Onomatopœic names of animals, natural phenomena, implements, etc., animal and human noises and actions, illustrate the principle of economy in the expenditure of mental energy and intelligence in the child, while, in the adult, and in the evolution of the race, the departure from these principles of naming, the creation or adoption of all-inclusive, general terms, the emergence of

generic terms in place of very special appellations, in other words, the economy of description made possible by the human intellect, which instead of describing a single quality of the object named, evolves or creates a word which calls up the image in its entirety, illustrate the workings of the human mind towards the same end, the production of a name-word with the least possible expenditure of mental effort.

It is a great achievement in mental economy for the child to name the dog 'bow-wow,' or to signify its desire for water by making a gurgling sound, but even greater is the economy which the best educated speaker of the English language illustrates in his use of the words 'dog' and 'water.' This gain in generality of expression has of necessity entailed a great loss of *Sprachgefühl* (the sense of the etymological significance of names) and of the utilisation of analogy as a factor in name-giving. The 'mouse' is no longer thought of as 'the stealer' (white mice are now guests and pets); the 'duck' is no longer perceived only as the 'waddler' ('duck' has even become a term of endearment); 'woman' is no more known only as 'the bearer' (the 'maiden lady' and the 'new woman' have asserted themselves as a power in the land); the 'ant' is no longer merely 'the swarmer' (upon the nineteenth century it is his *industry* makes the greatest impression); the 'father' is no longer simply the 'nourisher' (modern politics abundantly exhibit our 'city fathers' as 'bleeders' rather than as supporters and preservers); the 'star' is no more merely 'the strewer' (for the path of the theatrical 'star' of to-day is more often 'strewn' by the populace); a 'picture' is now far from being a mere 'scratching' (though it may be an 'etching') etc. Had we to-day to name all the things we know by a single quality which we perceive them to possess, to the exclusion of all others, our language would be metamorphosed in strange and curious fashion, and would, by very reason of our advance in knowledge and perception of *milieu* and environment, be in no way a return to the terms of our Anglo-Saxon forefathers, or the limited horizons of early childhood.

Farther from the child, in some respects, and yet, as many of the words of his secret languages prove, nearer to him than to the savages, are we of to-day, with our word-sentences ('Mind!' 'Beware!' Thanks!' etc.), with the twists we give our slang expression ('Oh, I don't know!' 'Come off your perch!') and the contraction and syncopation we have visited

upon the grammatical forms of our language (dropping of inflections, simplification of verb form, abandonment of the subjunctive mood, use of auxiliary verbs, etc.). The gain which we have made in mental economy, as well as the difference between some forms of speech among primitive peoples and the language of the child is well illustrated by the following sentence which Mr Noble cites (459, p. 336) from Dr Bleek's specimens of the Zulu tongue: *U-bu-kosi b-etu o-bu-kulu bu-ya-bona kala si-bu-tanda.* The sentence means 'Our great kingdom appears; we love it,' but a literal translation into English would run thus: 'The king*dom*, our *dom*, which *dom* is the great *dom*, the *dom* appears, we love the *dom*.' Another example which shows how far we have left behind the complexities of savage speech, or, as some say, certain primitive peoples have departed from an original simplicity, is given by Major J. W. Powell in the course of his brief essay on the 'Evolution of Language' (506). A Ponka Indian in saying 'a man killed a rabbit' really discourses thus: 'The man, he, one, animate, standing [in the nominative case], purposely killed, by shooting an arrow, the, rabbit, he, the, one, animate, sitting' [in the objective case].

Another detail in process of disappearance is the subjunctive mood, last relic of the vast labyrinth of verbal forms of mood, produced by alteration of the verb-stem itself. A recent investigation reveals the fact that among some 900,000 words, used by nine eminent writers of to-day (Hardy, James, Dowden, Lang, Lecky, Meredith, Trail, Morley, Stevenson), the subjunctive of any other verb but *be* occurs only fifteen times. A like tendency, although by no means so strongly, characterises most of the Romance languages, as Mr H. L. Thomas[1] has pointed out, and was even noticeable in some of the Latin writers of the Augustan era, to say nothing of Plautus and Terence. Both in Latin and in Romance texts the editors have made the old writers not infrequently conform to usage, practically obsolete in their own day. The Romance tongues have a vast accumulation of such *impedimenta* still, for, as Herrainz remarks (294, p. 239), Spanish 'has 850 irregular verbs, with 15,540 anomalous forms or words.'

Idea of Time; the Present.—'The idea of Time,' says Höffding (298, p. 184), 'is hardly to be traced in children before the third year,' and Guyau observes

[1] *Trans. Anthr. Soc.*, Wash., I. p. 29.

(259a, p. 147), 'the child distinguishes clearly neither times, nor places, nor persons,' and, like the animal, 'has not really a past.' Erasmus Darwin[1] had already said 'the ideas of brutes, like those of children, are almost perpetually produced by their present pleasures, or their present pains,' and Mme. Necker (455, I. p. 194) had noted the 'peculiarity of the child's imagination,' that it is 'occupied only with the present time.' Even the 'once upon a time' in older children is made present and the child feels the story as 'now.' The absence of tense-signs in many primitive languages may be compared with the verbs that serve for all tenses in the early development of child-speech. As Brinton (73, p. 404) says: 'Equally foreign to primitive speech was any expression of *time* in connection with verbal forms; in other words, there was no such thing as tenses.' Thoreau tells us (638, p. 110): 'I lived like the Puri Indians, of whom it is said that 'for yesterday, to-day, and to-morrow they have only one word, and they express the variety of meaning by pointing backward for yesterday, forward for to-morrow, and overhead for the passing day.' There is some exaggeration here, however, for, as Ribot observes (536, p. 259): 'The human race has acquired very quickly prevision and care for the morrow, even without passing out of [the stage of] savage life, hunting and fishing.' Besides 'the instinct of accumulation and preservation manifests itself in all its simplicity with the majority of animals and the most savage peoples, who live strictly from hand to mouth.'

Memory.—The forgetfulness and short memory of primitive man and of the child have been cited by more than one writer as affording a notable parallelism. Upon this point Steinmetz remarks: 'I believe that, generally, the memory of savage man is very short, but with considerable range of variation. It is more often termed short by observers when personal incidents and historical events are concerned, but, on the other hand, we cannot forget primitive man's surprising knowledge of the plants and animals which interest him, their qualities and habits—a faculty so often and so highly praised—as well as his astonishing knowledge of place, his wonderfully good memory for details of paths and localities, drinking-places and feeding-grounds of animals, all of which have been emphasised again and again. We must conclude, therefore, that the memory of primitive man is not at all short for all those things necessary

[1] *Zoonomia*, Vol. I. p. 265.

to him, or with which he daily comes into contact in the struggle for existence, for all things, which, for any reason, arouse his interest' (613, I. p. 313). Special and particular circumstances exercise and lengthen the memory of primitive man to a considerable extent.

Mr G. R. Stetson, who investigated the memory ability of 500 white (average age 11 years) and 500 black (average age 12.57 years) children in the public schools of Washington, D.C.—the test was the repetition of a brief poem after reciting it (verse by verse) in concert twice—found that the negro children had 18 per cent. better memory-retention. And while there seemed to exist a general correspondence between memory-averages and scholarship, the memory-rank of the negro children was higher than their study-rank more conspicuously than was the case with the white children, although the negro children generally were inferior with regard to intellect. Dr F. W. Colegrove, in his study of 'Individual Memories,' has some interesting details as to the difference between the memory-recollection of whites, negroes and Indians, the *rôles* of racial experience and environment being very noticeable. One very curious fact is thus recorded: 'One could hardly find an Indian or white child afraid of a candy sheep's head because the teeth showed, but this was the earliest memory of a negress' (117, p. 240).

Historic Sense.—The historic sense among children and primitive peoples has been studied by Mrs Mary S. Barnes from the data of ethnology, and the examination, by the story-method, of some 1250 Californian school children, between the ages of eight and sixteen. These children were given 'a story without a date, a place, a name, or a moral,' and the questions spontaneously asked by them were taken as evidence of 'the comparative curiosity of children as to personalities, time, cause and effect, and truth.' The chief results of Mrs Barnes's investigations (36, p. 89) may be thus summarised: 1. With children (from seven years of age onward) all the elements of history (time, cause and effect, social, unit, truthful record) lie within the field of their curiosity, and the origin-questions ('Who made us?' 'Where did we come from?' etc.) are very early in their appearance. So 'among savages they appear altogether in the rudimentary forms of the myths of origin, which, unplaced in space, vaguely placed in time, attempt to give some true account of the beginnings of man and of the world'; and,

moreover, they 'progress together, none of them missing, now this one, now that one leading.' 2. The sense of time, with savages, 'based upon the power to count, and the power to record that count concretely, either with the fingers, the notched stick, or the knotted cord, develops along with the development of the inventions for keeping count; in other words, this sense requires much objective assistance.' In children 'this sense is slight,' and 'time is badly understood until the age of twelve or thirteen'—facts which seem to justify the conclusion that 'the child should be assisted, as the savage was, by some concrete symbol or invention [chart or net of centuries], by which he can keep his counts in sight, and reckon time visibly,' as he does space on a map. 3. Both with savages and children 'the notion of cause and effect, or, to put it differently, the power to infer, is present from the beginning, but with primitive people it is unconscious, and with children the power does not at all become critical before the age of twelve or thirteen, seeming then to receive a positive impulse, becoming stronger as well as more exact'—facts which permit us to conclude that 'children should not be especially trained or urged in inference until the ages of twelve or thirteen, and that then we may reasonably encourage them to draw independent and correct conclusions from given premises.' 4. With both primitive peoples and children 'the sense of the social unit concentrates itself about ancestors, heroes, kings, developing into a sense of wider personality, as their history, that is, their experience, widens,' but with the latter the 'larger interest' cannot be said to develop before the ages of eleven or twelve. Here the conclusion is that 'history should first interest itself with the biographies of heroic and striking characters who are connected with the previous knowledge or life of the child [with the myths he already knows, with the country] and always with that life of action [fighting, hunting, building] which belongs to children and primitive people alike.' For children this sort of 'instruction may take the place of war and trade in widening their narrow world.' 5. Savages have a 'quite positive sense of a truthful record,' seek 'to preserve the *original* record or relic by every means in their power,' although 'it does not occur to them to substantiate that truth by any searching criticism of evidence,' while children 'are very anxious to know whether a record or story is true or not, and show interest in an original record or relic,' although they seem

to be 'largely contented with being told that it is true by a person in whom they have faith, not showing a tendency to inquire critically into the matter until the ages of twelve or thirteen.' Here we may argue in favour of 'connecting history from the beginning with original records, scenes and objects,' by which means the children will be afforded 'that material tie with the past which they desire as much as the savages.' 6. With the race 'critical history develops last, being preceded by beautiful history, moral history, and mnemonic history, all these forms running along contemporaneously,' while with children 'history finds natural expression in stories, pictures, dramatic plays and poems, with or without a moral.' The conclusion here is that 'we should seek our history for children in Plutarch, Homer and Shakespeare, before seeking it in edited documents with notes and criticisms of the modern school of history,' and we must let the scientific forms of history 'wait on the development of material, and also on the development of the critical sense; that is, until the ages of twelve and above.' The prominence of lists and genealogies in primitive history seems to justify to some extent 'some form of chart or list or century calendar which can constantly be used, as a map would be, for matters of time,' while 'the wide employment of æsthetic and didactic forms of history indicates that they should form a large element in the early presentation of our subject.' 7. Among primitive peoples 'the instant widening of interest and curiosity, when brought into contact with new objects and people,' and with children 'the instant awakening of interest at the sight of a strange relic or picture' are facts which serve to 'indicate that we may widen the field of history as fast as new experience or knowledge can widen it.' 8. The sex-difference among children—boys appear more curious in regard to *who*, *where*, *how*, girls as to *why*; boys are superior in inference; time, truth and general detail seem to show no sex-difference—'are not pronounced enough to warrant a separation of boys and girls,' while the probability is that 'no artificial method of stimulating these powers will equal the natural rivalries of the school-room and the sexes.'

Curiosity.—'A curious child' is a familiar figure with the poets, and Guyau rightfully says: 'The child is naturally curious,' repeating what Fénelon had already written in 1678, 'the curiosity of children is a natural *penchant* that precedes instruction,' and what Plutarch had written before Fénelon:

'Children are much in love with riddles and such fooleries as are difficult and intricate; for whatever is curious and subtle doth attract and allure human nature as antecedently to all instruction agreeable and proper to it.'[1]

Says Ribot (536, p. 60): 'This primitive necessity—the need to know—is, in its instinctive form, curiosity. It has all degrees, from the animal that feels and scents to a Goethe who searches everything, wishes to know, to embrace everything; from puerile investigation to the highest; but whatever differences there may be in its object, in point of application, in its intensity, it always remains identical with itself. He who is without it, as the idiot, is a eunuch in the intellectual order.' In all probability, the child is more given to curiosity than primitive man; there is some truth in Spencer's dictum that the savage has little taste for novelty.

Story-telling.—Between the story-telling of the child and that of primitive man resemblances might justly be expected, although many of the tales and legends of even the lowest races of men possess so many peculiarities due to adult experience that the comparison cannot always be made upon similar terms. Moreover, the alleged 'childishness' of many of the tales of savages is born of the inability or disinclination of the occasional visitant or prejudiced resident among savage peoples to thoroughly seize and comprehend their ways and means of expression. Very often these are rather 'child-like' than 'childish.'

From the collation of fifty-six children's stories (thirty-two by boys, twenty-four by girls)—'the stories were told, not written, by the children at school, they being allowed perfect freedom in telling anything they wished, the stories not being criticised in any way'—Miss Clara Vostrovsky, of the experimental school connected with Stanford University, California, thus sums up the differences between the child's story as told by himself and the same story told for him by an adult: 'In the child's story no sentiment is expressed; nor are his own feelings referred to in any way. There is little of the æsthetic; no description of dress or persons [the story was of a little garden party]; and not general, but definite, names are used by him. On the whole, the child gives facts, and lets life itself speak for him. He has not yet learned that one can be in active pleasant circumstances and not be happy. With him certain facts or

[1] *Morals*, III. p. 315.

conditions produce certain inevitable reactions, and to mention these reactions seems to him an utter waste of words. Besides he has not yet reached the unfortunate stage of thinking of them' (671, p. 16). Not a few of the characteristics here mentioned belong also to the earliest forms of story-telling in the race, and the resemblance is, naturally enough, all the closer when the oral, not written tale of the child is compared with the unwritten stories of the savage. The omission of the apparent and the inevitable is often marked in the myths of savage and barbarous peoples, and the absence of such to us (who seek to interpret them) very necessary links has often led to great misunderstanding.

It further appears that actions and names fill a very large place in the child's mind—feeling, sentiment, æsthetic details, moral distinctions, etc., playing quite an insignificant *rôle*. Moreover, 'no great difference is shown in the chart between boys and girls, although boys seem to care a little more for action, while girls care decidedly more for what is said.'

The general run of the subjects dealt with can be seen from the following table:—

Stories about the child himself or about other children	40	About every-day subjects and things of common occurrence with the child	11
About older persons	1	Unusual events, trips, parties, etc.	45
About other subjects	15		
True stories	49		
Imaginary	7		

Mental and Emotional Characters of Primitive Peoples.—Concerning the Cucámas Indians, a Tupí tribe of the Upper Amazons, in Peru, Mr H. W. Bates observes (42, p. 259): 'The goodness of these Indians, like that of most others amongst whom I lived, consisted perhaps more in the active bad qualities than in the possession of good ones; in other words, it was negative rather than positive. Their phlegmatic, apathetic temperament, coldness of desire, and deadness of feeling, want of curiosity and slowness of intellect, make the Amazonian Indians very uninteresting companions anywhere.' Not only is 'their want of curiosity extreme' (though a dash of wit appears here and there), but 'their imagination is of a dull, gloomy quality,' and they also 'seem never to be stirred by the emotions—love, pity, admiration, fear, wonder, joy, enthusiasm.' These, according to Mr Bates, are 'characteristics

of the whole race,' and the good fellowship of these Indians 'seems to arise, not from warm sympathy, but simply from the absence of eager selfishness in small matters.'

Dr Franz Boas (60, p. 21), who, by scientific training and long personal experience with the aborigines of North America, is well qualified to speak upon such matters, tells us how 'the descriptions of the state of mind of primitive people, such as are given by most travellers, are too superficial to be used for psychological investigation,' and how little there really is in the statement that certain mental qualities are 'racial characteristics of the lower groups of mankind.' The evidence is very fallible; the traveller is a prejudiced witness from the beginning; the missionary has his mind strongly set against the religious ideas and customs of the savage; the trader is without interest in their beliefs, their arts and their institutions; the Greek scholar looks on their language as a senseless jargon; while few men, and still fewer women, have resided among primitive peoples long enough and entered into their whole life sympathetically enough to be much more than 'observers of disconnected actions, the incentive of which remains unknown.'

Fickleness.—The fickleness of primitive man figures in the modern text-books of psychology as one of his most fundamental traits, but, as Dr Boas remarks, 'the proper way to compare the fickleness of the savage and that of the white is to compare their behaviour in undertakings which are equally important to each,' and 'the alleged fickleness may always be explained by a difference of the valuation of motives, and is not a specific characteristic of primitive man.' The white man's 'fuming and raging' over loss of time, and lack of interest on the part of his native companions or employees, must appear to them strange, who have no such conception of the value of time and no such interest in the particular subject as he. That primitive man has perseverance, however, and in a high degree, is abundantly shown by the time and care he takes with his weapons, utensils and art products, the privations and hardships he undergoes to satisfy his ambition, and the fasting and other strenuous ceremonials to which he submits as a preliminary to taking his place among the men and warriors of his tribe. Primitive man is fickle where all human beings are fickle, but not specially so.

Passion.—Another thing said to mark primitive man as

such is 'outbursts of passion occasioned by slight provocation.' Here again, as Dr Boas points out, the social status of the white and the savage is so different, that if perseverance and control of passion seem less common with savage and barbarous peoples, 'the cause must be looked for not in the inherent ability to produce them, but in the social status which does not demand them to the same extent.' The manifold and complicated customs, restrictions, taboos, etc., concerning marriage and the sex-relations, religion, food supply, and the like, are sufficient evidence that, with primitive man, 'his passions are just as much controlled as ours, only in different directions.' The irrelevancy of the question of the rights of slaves, which caused the outburst of 'the noble passion which preceded and accompanied the War of the Rebellion,' would, Dr Boas assures us, with not a few primitive peoples, rank the great struggle of the North and South, in its highest aspects, an unjustifiable outburst of passion. Here, also, the difference between primitive and civilised man has been exaggerated by ignoring the common human characteristics and the special circumstances evoking them.

Lack of Concentration.—No trait of primitive man, however, according to the school of Spencer and the book-psychologists, is more characteristic than 'his inability of concentration when any demand is made upon the more complex faculties of his intellect.' Fortunately we have concerning this point the evidence of two witnesses, between whom it is not hard to decide. G. M. Sproat, who visited the natives of the west coast of Vancouver Island in 1860, says of them: 'The native mind, to an educated man, seems generally to be asleep. . . . On his attention being fully aroused, he often shows much quickness in reply and ingenuity in argument. But a short conversation wearies him, particularly if questions are asked that require efforts of thought or memory on his part. The mind of the savage then appears to rock to and fro out of mere weakness.' Concerning this passage, which Spencer and other writers have quoted approvingly, Dr Boas himself declares: 'I happen to know the tribes mentioned by Sproat through personal contact. The questions put by the traveller seem most trifling to the Indian, and he naturally soon tires of a conversation carried on in a foreign language and one in which he finds nothing to interest him. I can assure you that the interest of those natives can easily be raised

to a high pitch, and that I have often been the one who was wearied out first.' This will be corroborated by anyone who has really entered into the life of primitive man—his art, his religion, his folk-lore. Moreover, 'the intricate system of exchange,' 'the systematic distribution (planned without mnemonic aids) of property in such a manner as to increase their wealth and social position,' to say nothing of the other characteristic activities of these Indians, afford ample proof of their mental awakeness, and 'require great foresight and constant application.' Careful studies of other primitive peoples would doubtless result in similar discoveries.

Originality.—Again, it is far too customary to stigmatise primitive man as altogether 'hide-bound,' ultra-conservative, and especially as 'lacking originality,' and never being willing or able to 'deviate from the traditional customs and beliefs.' Although custom is, naturally, stronger, where it is more useful and necessary in social life, among primitive peoples, they cannot justly be charged with a complete lack of originality. Dr Boas cites as proving the existence of a considerable fund of originality among the lower races of men 'the great frequency of the appearance of prophets among newly-converted tribes, as well as among pagan tribes,' the frequent introduction of 'new dogmas by individuals,' the numerous changes in myths and beliefs 'accomplished by the independent thought of individuals,' and holds that 'the mental altitude of individuals who thus develop the beliefs of a tribe is exactly that of the modern philosopher,' for even with us 'the mind of even the greatest genius is influenced by the current thought of his time.'

Interesting data upon this topic are to be found in the elaborate study of the 'Ghost-dance' religion of the Indians of the Western and North-western United States, recently made by Mr James Mooney, who remarks: 'Briefly and broadly it may be stated that the more primitive a people the more original their thought. Indian prophets are usually original as to their main doctrine, but are quick to borrow anything that may serve to make it more impressive.'

If the savage is to be compared with the child, it cannot be along the lines of unlimited fickleness, outbursts of passion with but slight cause, lack of power of mental concentration, weak interest, mental inertness, lack of originality, etc., but the comparison must take place along the lines of development

of these and other characteristics in the special circumstances under which they arise and evolve. The savage may be a child, it is true, but he is a very human child, and 'father of the man,' here as elsewhere. General impulsiveness is, in fact, too vague and general an accusation, and one which fails in so many specific cases that one may reasonably doubt the existence of specific differences in this regard between the 'lower' and 'higher' races of man, apart from social and environmental stimuli.

Improvidence.—Improvidence is often said to be characteristic alike of the savage and the child, and Herbert Spencer and other writers have attributed this 'mark of primitive man' to his general impulsiveness. But Dr Boas, who knows the savage well, tells us (60, p. 22): 'I believe it would be more proper to say, instead of improvidence, optimism. "Why should I not be as successful to-morrow as I was to-day?" is the guiding thought of primitive man. This thought is, I think, not less powerful in civilised man. What builds up business activity but the belief in the stability of existing conditions?' There is then 'a difference in the degree of improvidence caused by the difference of social status,' but there is in this respect no 'specific difference between lower and higher types of man.' The true savage is optimistic as the real child is, and the genius who 'takes no thought for the morrow.' In a sense, all believe in the immortality of conditions and opportunities as well as in that of individuals or entities. For them the world is one long to-day. As the little Italian girl said when promised something to-morrow: 'To-day is already to-morrow' (369, p. 188). Mr Hartland tells us that the fairy-tales in which the hero 'detained in Fairyland is unconscious of the flight of time' are really 'characteristic of a high rather than a low stage of civilisation.' (286, p. 254). The Dumagas of the Philippines, so Dr Brinton informs us,[1] when the missionaries tried to persuade them to settle down and adopt sedentary habits, made answer 'that their religion forbade them to take thought for the morrow, but to trust wholly in their gods to provide.' The sacred scriptures of the Semitic populations of Western Asia are not more optimistic than this. It can only be compared with the optimism of the child.

Savage and Civilised.—Professor O. T. Mason, in his paper

[1] *Amer. Anthr.*, XI. p. 301.

on 'The Savage Mind in the Presence of Civilisation' (414, p. 45), insists that 'the only valuable education to a lower race is that which enables the subjects to develop their highest energies and intelligence among those where their lives are to be passed. In its true and widest sense education is not confined to school instruction [highly stimulated savages, who are merely schooled, either perish miserably or become lazaroni among their own people, or the dominant race]. It embraces all that changes in the presence of higher culture.' Moreover, 'functions [which vary more easily than structure] may change many times in the life of an individual, but the edifice of the body politic, the family, and the church, can be reconstructed only with the greatest wisdom and patience.' Contact with good, honest, just and law-abiding whites will do more to reform the dress, the habits, and, where necessary or possible, the beliefs and institutions of the Indians, than the 'education' of a few, who find themselves in large part unable to keep from relapsing into the ways of their kinsmen or abandoning themselves to the vice and crime of the whites. Sudden substitution is hardly ever quite safe; gradual transformation is nearly always infinitely better. It is absolutely necessary to pay attention to the graduations, 'stages of culture,' and social evolutions which are known to have taken place in the history of the innumerable tribes of man. 'There are certain lines or categories of culture,' says Professor Mason, 'such as food, dress, shelter, war, industry, ornament, gratification, traffic, family organisation, government and religion, along which there has been evolution and elaboration,' and among these categories 'there is gradation, nearly in the order named.' Since it is 'more difficult for a people to change in the higher and more intellectual than in the lower categories,' it will generally be found 'easier to induce a people to change food, dress, implements, weapons, etc.,' than to alter their language, kinship, government and religion.'

Here again a comparison may be made with the development of child-life, a comparison which brings out what is really best in the child and in the savage.

Karl von den Steinen, whose intimate knowledge of the primitive peoples of Central Brazil endues his words with great significance, observes: 'Savagery, as it really is, finds still deep lodgment in our brains and hearts, and seems to us in many ways an honourable and estimable possession. The

culture of primitive peoples is, on the average, much higher, ours much lower, than generally appraised.'

So also Dr Donath, who lays great stress upon the evidence just cited: 'However low, mentally, the stage of primitive man may be, it is, after all, mostly conditioned by external circumstances, especially by lack of exercise. The brain organisation of primitive man, I believe, allows him a capacity for mental development, which is hardly less than that of the averagely endowed European' (171, p. 46).

The best recent studies of language, sociology, psychology (numeration, colour-sense, association of ideas, mind-content, senses and will) seem to support this view.

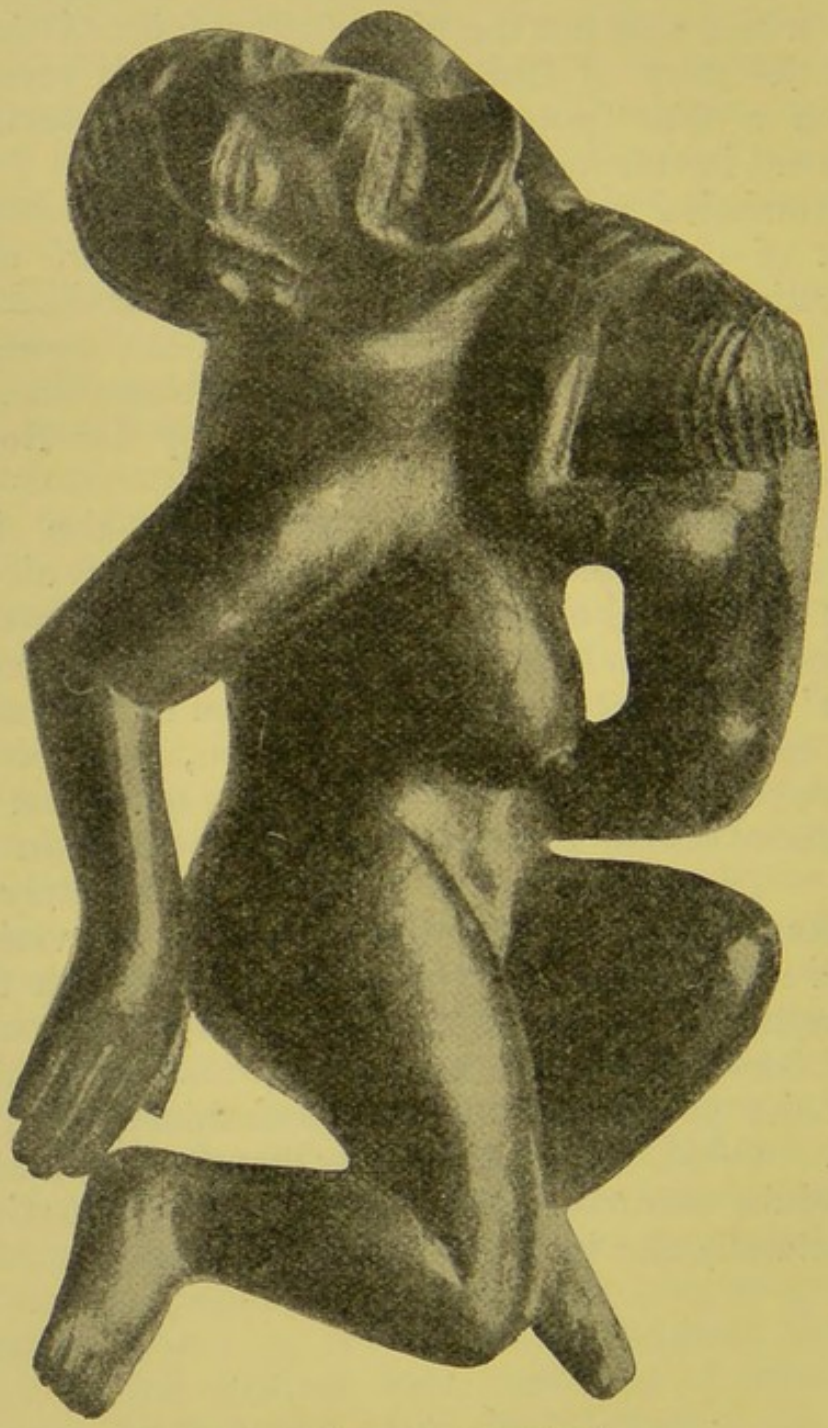
Racial and Individual Development.—Dr Franz Boas (60, p. 7), in endeavouring to answer the question why the ancient inhabitants of Europe were 'able so easily to assimilate the culture offered them,' where at the present time 'primitive people dwindle away and become degraded before the approach of civilisation, instead of being elevated by it,' a question which has often been answered by assuming 'a higher organisation of the inhabitants of Europe,' enumerates the following interesting points of difference between the contact of culture and barbarism now and then: 1. The primitive people of ancient times were alike in appearance with the civilised man of their day, and 'it was possible that, in the colonies of ancient times, society could grow by accretion from among the more primitive people. 2. The 'permanent contiguity of the people of the Old World, who were always in contact with each other, and therefore subject to the same influences,' did not permit 'the devastating influences of diseases [*cf.*, the epidemics following the advent of the whites into America and Polynesia], which nowadays begin to ravage the inhabitants of territories newly opened to the whites,' to play so great a *rôle* in the past as now. 3. The contrast between the culture represented by the modern white and that of primitive man 'is far more fundamental than that between the ancients and the people with whom they came into contact;' to-day, *e.g.*, modern methods of manufacture exterminate the industries of primitive peoples, whereas, in olden times, the rivalry was between two hand-products only. 4. In not a few parts of the world, *e.g.*, America and portions of Siberia, 'the primitive tribes are swamped by the numbers of the immigrating race,' which 'crowds them so rapidly out of their own haunts that

no time for gradual assimilation is given'—a state of affairs hardly known in ancient times.

The more favourable conditions for assimilation of the primitive tribes, and not the higher gifts of the civilised, seem, so far as the story of European civilisations is concerned, to have been a most potent factor in their preservation and advancement in culture.

An interesting parallel might be made here between the treatment of children by adults in the way of supervision and education and the modern impact of civilisation upon primitive man. If there actually have been more geniuses in proportion to the population in ancient times and in certain quarters of the globe, the facts noted by Dr Boas might, in part, account for it.

To-day, adults emphasise too much the individual differences, instead of the genial likenesses of all children, rendering difficult the proper growth of the general social virtues and the fundamental traits of genius; lack of 'co-education' at the right epoch, the absence of the *real* mother so often among the teaching profession, and of the best atmosphere of family-life in the school—education being so often bachelor-ridden and old-maid-ridden—tend in the same direction. The school-boy is so often an entirely different animal from the home-boy that diseases of various sorts find much easier lodgment with the one than with the other. Adults emphasise too much the gap between the wisdom of childhood and their own knowledge, and exterminate the genius of the young by the school-machinery of their own invention. Often, too, the child is literally swamped by the mass of adults about him, who do not give him time at all to grow naturally and in his own best fashion.



THE 'BEAR MOTHER.'

Slate Carving of Haida Indians, representing the agony of the mother in suckling her child, half-human, half-animal (from *Rep. U.S. Nat. Mus.*, 1888).

CHAPTER IX

THE CHILD AND THE CRIMINAL

Lombroso and Criminal Anthropology.—In 1876 Professor Cesare Lombroso, of Turin, published, under the title *Uomo Delinquente* (363), the first volume of a book which may be said to have created the so-called 'Italian School' of criminal anthropologists. The literature on the subject since that time has assumed huge proportions, the theses of the Italian psychiatrist having been debated pro and con in almost every language of Europe, the books treating of the subject now numbering hundreds, the pamphlets, minor essays and articles counting up their thousands. The gist of the discussions may be read in the article of Dr Robert Fletcher (216) and the volume on *The Criminal* (184), by Havelock Ellis, while some of the more recent data are treated of in Ferriani (202). The chief points of Lombroso's theories, for our present interest, lie in the approximations which he sought to establish between the criminal, the savage and the child.

From extended and repeated observations of the anomalies, abnormalities, defects and imperfections of the body, its members and organs, anatomically, physiologically and psychologically considered, Lombroso came to the conclusion that the criminal was physically atavistic, inheriting forms and peculiarities from both ancient historic and prehistoric man. From similar data he also sought to make out analogies between the criminal and the lunatic, epileptic and other degenerate classes of humanity. This association of the criminal with the savage and the lunatic had also been made some five or six years before the appearance of Lombroso's book by Dr Bruce Thomson, of Perth, Scotland, in an article on 'The Hereditary Nature of Crime,'[1] where he notes the difficulty of determining 'where badness ends and madness

[1] *Journ. Ment. Sci.*, Jan. 1870.

begins in criminals,' and remarks, concerning the criminal class, who have their *locale* and community in the large cities, 'they degenerate into a set of demi-civilised savages, who in hordes prey upon society'; these, he says, are 'born into crime, as well as reared, nurtured and instructed in it, and habit becomes a new force, a second nature, superinduced upon their original moral depravity'; and 'from such physical we naturally expect low psychical characteristics'; we get thus a criminal type. Beside the atavistic argument Lombroso put forward another based upon the phenomena of childhood. Gathering together from Moreau, Bain, Perez and others, observations and statements concerning the malevolent and maleficent instincts and impulses of children, their egoism, cruelty, etc., he made the generalisation that 'the germs of moral insanity and crime occur in normal fashion during the first years of man's life, just as in the embryo we are constantly meeting with forms which, in the adult, are monstrosities.' Both the atavistic argument and the argument from childhood he combined in the declaration that the criminal, himself recalling the savage and prehistoric man, can be seen, on a reduced scale, in the child, while the criminal, subject to an arrest which has prevented the transformation of these tendencies of early life, may be looked upon as 'a sort of incomplete product, which retains in adult life the ordinary normal attributes of childhood' (143, pp. 59-61).

Criticisms of Lombroso's Theory.—Among those who criticised the Lombrosan view of a *rapprochement* between the child and the criminal were, in the earlier stages of the discussion, Magnan, Tarde, Benedikt, Dortel, Féré, etc. Magnan (143, p. 61) maintained that children who seemed to present, in a sort of embryonal fashion, the criminal type were 'not normal but degenerate'; Dortel (143, p. 61) held that 'while the criminal had certain peculiarities of the child, the child, on the other hand, had nothing of the criminal about him'; Tarde (143, p. 61) argued against the existence of 'a childhood instinctively maleficent,' pointing out that 'gentle, generous and disinterested children existed, just as surely as the egoistical and evil-disposed.'

Tarde, who is a magistrate as well as a philosopher, criticised also the other theories of Lombroso: Madmen there doubtless were among criminals, but not every law-breaker

was a lunatic; the most degenerate are far from being the most criminal—indeed, the most dangerous criminals are often the least degenerate; if there is a connection between the savage and the criminal, the recruiting of criminals more and more from the refined and corrupted environment of the great cities of modern civilisation is fast destroying the resemblance; and imitation counts for much, very much; so, too, the sociological factors.

Colajanni (116), rejecting physical atavism as the cause of crime, sought to find its explanation in 'psychic atavism,' 'moral atavism,' his theory being founded upon 'the comparison between the savages of to-day and civilised criminals, the analogy between criminals and children (a transitory reproduction of the moral past of our ancestors), and the possession in common of certain traits by criminals and the lower classes, the belated ones of civilisation' (143, p. 121). Crime for him is a social, not a biological, product, but it is difficult to see how one can have 'psychic atavism' without at least some sort of physical atavism. Thus Garofalo (143, p. 134), one of the most prominent of the Italian criminologists, seeks an organic deviation upon which to base the psychic anomaly of crime. Garofalo considers the typical criminal 'a monster of the moral order, having characters in common with savages and other characters which belong even lower down than the human race'; he is largely abnormal as compared with civilised man, not so much pathological as abnormal. He seems sometimes to lay emphasis on atavism to a bestial type preceding prehistoric man or the savage peoples of to-day. Another point which he raises is, that 'while prehistoric man, living alone with his family, could have no conception whatever of altruistic sentiments, the criminal from birth lives in social surroundings, degraded, no doubt, but of which he deliberately ignores the duty' (216, p. 210). So, too, as to the connection with the child in some measure.

With the partisans of the sociological school—for whom 'crime is largely a social product'—the connections asserted by Lombroso lose their force, environment, education, family life, social contact, professions, condition of the working-classes, alcoholism, low forms of amusement and excitement, etc., being regarded as the great determining factors.

Lacassagne, the head of the Lyons school, declares epi-

grammatically (143, p. 157): 'The social *milieu* is the culture-broth of criminality; the criminal is the microbe, an element having importance on that day alone when it finds the broth suited to make it ferment. Societies have only the criminals they deserve.' The criminal *per se* has a very mediocre importance; he is not a type, since honest folks from time to time manifest one or all of his anthropological characters. Against the fatalism, which seems inevitably linked with the anthropometric theory of crime, Lacassagne places the 'social initiative.' Another able defender of the theory of the predominance of the social factor in the production of crime is Manouvrier (143, p. 161), in Paris; others of somewhat the same mind are, in Russia, Orchansky; in Belgium, Prins; in Germany, Baer and Näcke; in Italy, Morselli.

Dr Kirn, of Freiburg, in Bavaria, writing in 1893, thus expresses his opinion of the criminal (327, p. 712): 'Certainly the criminal, so far as character is concerned, has not the slightest in common with the primitive man or the child, for in both the last it is a question of as yet undeveloped moral idea, in the former we have to deal with a degeneration of character.' Crime is largely not an atavism but the result of human social relations, and criminal anthropology forms but one chapter in the anthropology of degeneracy. Occasional criminals, indeed, are, as a rule, mentally sound but weak morally. Criminals of passion, occasion and habit are none of them a separate type, atavistic or infantile.

A searching criticism of the Lombrosan theories was published in 1896 by Professor D. Sernoff, of the University of Moscow, based upon anatomical investigations, and embodying the thesis that: 'The born criminal in Lombroso's sense has no real existence; that being which, according to the description of Lombroso, is branded in germ by the stamp of lower animal organisms, and meets us in almost every second inmate of a prison—that Orang-Utang, as Taine calls him—does not exist in mankind' (586, p. 343).

Orchansky, in his study, 'Russian Criminals and the Theory of Lombroso' (465), based upon the examination of some 3000 prisoners and 200 crania, controverts many of the chief tenets of the Italian criminologist. He finds no greater proportion of lunatics among criminals than among normal subjects, and no typical criminal physiognomy. For Orchansky 'crime is the result of bad social hygiene.' In other words, it

is 'not that bad people create crime, but that bad conditions make criminals out of the weak and the ignorant.'

A recent Brazilian writer, Dr J. A. Peixoto, in his thesis on 'Epilepsy and Crime' (483), holds that criminals are 'essentially normal individuals whom the society of the day has not been able to submit to its domination,' crime itself being a natural product of the social organism. Criminals, persisting through the ages, represent primitively, although now only 'refractory beings,' some of the moving spirits in the formation of the earliest societies among men. All 'refractory spirits,' however, are not criminals. Some, egoistic to the end, attack society and force it to serve their fears, ambitions, hates and passions, using the cannon, the sword or the torch; others lift up against society the arms of speech and logic alone, moved by altruistic desires for its improvement and reformation. The world will always distinguish its Jesus from its Napoleon, its Alexander from its Tolstoi. Criminals, themselves, Peixoto thinks, fall into three chief categories: (1) The anti-social rebels; (2) a mixed type, partly influenced by degeneration; (3) a symptomatic type of complete mental degeneracy.

Of the 'political criminal' Lombroso and Proal have written at length, but, as Havelock Ellis observes (184, p. 1), there are different sorts of political 'crime' and different ways of rewarding it: 'Consequently the "political criminal" of one time or place may be the hero, martyr, saint of another land or age. The political criminal is, as Lombroso calls him, "the true precursor of the progressive movement of humanity"; or, as Benedikt calls him, the *homo nobilis* of whom the highest type is Christ.' Perhaps, after all, it is the 'political criminal' who is responsible for much of the 'crime' of childhood.

One of the best books on the anti-Lombrosan side is Baer's *Anthropological Study of the Criminal*, which appeared in 1893. According to Baer, the skull of the criminal has nothing specific about it, the anomalies are, in all probability, mostly of a pathological nature, and the so-called 'atavistic signs' are rare phenomena that may be met with almost anywhere among men; nor does the body of the criminal in size and general characteristics of itself and its organs offer anything that can be looked upon as marking a special type, indeed some of the 'degenerate signs' are really more common sometimes in non-criminal individuals; the much-talked-of 'criminal physiognomy' also affords no special type; the prevalence of

left-handedness, the pain-obtuseness and other supposed traits of criminals have been grossly exaggerated. In short, Baer holds that there is no 'criminal type,' no 'born criminal' in the Lombrosan sense. Both the mental and the physical state of the criminal are those of the social class to which he belongs, the community of which he is a part. His anomalies of mind and body, when not distinctly pathological, spring from his environment; arrests of development, chance and accident play their *rôles* as well. Neither physically nor mentally is the criminal 'an atavistic phenomenon,' and he is comparable neither to the child nor to primitive man (17).

The Criminal and the Child.—In an address before a meeting of teachers in Turin, during the summer of 1895,[1] Lombroso gave new expression to his views regarding crime and the child. Anger, lying, cruelty, lawlessness, excessive vanity and selfishness, obscene tendencies, passion for alcoholic drinks (the last hitherto much underestimated) are so characteristic of childhood as to make the great Italian psychiatrist think very little of the purity and innocence often ascribed to the child, who, in reality, manifests, during the early years of life, so many criminal tendencies that, especially with respect to moral feeling and actions, the habitual criminal seems to be one who has remained at the child's stage of development in these and other kindred matters.

As Dr C. Ufer points out (657, p. 74), the book of Baer, referred to above, contains an excellent presentation, from another point of view, of these phenomena of childhood of which so much has been made by writers of the Italian school. Many of the 'crimes' and criminal tendencies of childhood and early youth, offences committed against property and person with a deliberation and a coolness hardly exceeded by the habitual criminal, are, Dr Baer thinks, often partly social, partly pathological in their origin, and in no wise absolutely inherent in child-nature. Thus town-life, where the harshness and soul-jarring character of the struggle for existence, and the sharing of young children in the support of the family and the household, develops precocious thinking, and cunning and astute employment of the moment to their own advantage, an abnormally early development of the intellectual side of life, often one-sidedly abnormal, since heart and feelings are repressed, neglected, or left undeveloped. Imitation, again,

[1] An English version appeared in the *Monist* for October of the same year.

is another great factor in the production of the monstrosities of childhood, and the elucidation and preservation of criminal tendencies. At the most, many of the so-called 'criminal characteristics' of children are psychopathic dispositions, for the further development of which on the way to crime and criminal phenomena opportunity and social *milieu* are the chief breeding-grounds. Altogether, Baer holds a much more favourable opinion of the child than do many more recent writers, even those who are not committed to the Lombrosan theory, granting his imperfect moral development but seeing no reason to denominate him a habitual criminal in embryo, his so-called 'degenerative signs' being perfectly susceptible of other explanations.

Dr Hannes Gross, a jurist and the author of an encyclopædic work on criminal psychology' (251), although almost a partisan of Lombroso in some of his views about woman, takes the idea of the *naïveté* of childhood to heart. For him, children stand out in contrast to adults by reason of their 'uncorrupted nature'; they are more upright and honest, and it is contact with the 'stupidity' of adults that spoils children and breeds criminals.

Havelock Ellis (184, p. 211) notes the precocity of crime in children (even expert professional criminals being produced, in India especially, before they are out of childhood's years), and the existence of 'a certain form of criminality almost peculiar to children, a form to which the term "moral insanity" may very fairly be ascribed.' This 'moral insanity,' which, often in combination with intellectual precocity, makes itself manifest between the ages of five and eleven, and is 'characterised by a certain eccentricity of character, a dislike of family habits, an incapacity for education, a tendency to lying, together with astuteness and extraordinary cynicism, bad sexual habits, and cruelty towards animals and companions.' Moreover, 'these characters are but an exaggeration of the characters which, in a less degree, mark nearly all children,' thinks Mr Ellis, for 'the child is naturally, by his organisation, nearer to the animal, to the savage, to the criminal, than the adult,' and 'the charm of childhood for those who are not children lies largely in these qualities of frank egotism and reckless obedience to impulse.' Thus it happens that 'the criminal is an individual who, to some extent, remains a child his life long—a child of larger growth and with greater capacity

for evil.' The adult criminal, in spite of the rarity of mental acuteness (which often marks young criminals), resembles children in many ways, impulsiveness, light-heartedness, easy-going character, etc. Even the convict, according to Dostoieffsky, is 'a child.'

Compayré, in his study of the intellectual and moral development of the child (123, p. 303), considers as radically false the idea of the purity and innocence of childhood so beautifully spoken of by About and Bernardin de Saint-Pierre, as well as the idea of those like Saint Augustine, who looked upon children as 'born for damnation.' Man, not being naturally a moral being, he only becomes so gradually, and the child can start with no approach to perfect morality, for in reality the child does naturally bad or good, and neither a panegyric nor an anathema of childhood is in order. To be fair, also, one must study the child under favourable circumstances and normal conditions, and having done so one sees that 'the qualities of the child are often only the reflection of its parents, that child-character is, so to speak, a work written in collaboration, where it is hard to discover which parts really belong to each of the collaborators, nature and education.' What Legouvé has said of stealing: 'The child has not the instinct of theft; he lacks the instinct of other people's property,' is one of many epigrams that are not without some truth.

Faults of Childhood.—Compayré (123, p. 306) points out that it was 'a bachelor and a bishop who drew up most cleverly the indictment of the faults of childhood.' La Bruyère, in his chapter on 'Man,' written in the seventeenth century, declared: 'Children are haughty, disdainful, angry, envious, curious, interested, idle, fickle, timid, intemperate, lying, given to dissimulation; . . . . they do not like to suffer ill, but love to inflict it: they are already men.' Dupanloup, bishop of Orleans, in the nineteenth century, whose book on the 'Child' has been translated into English, is, naturally, theologically-minded, and for him, as for St Augustine, 'childhood fairly pullulates with the beginnings of sins.'

So far as science is concerned, however, it is in Germany that the 'faults' and 'defects' of childhood have, apart from the Lombrosan school, received most attention. Emminghaus' 'Psychical Disturbances in Childhood' (191), published in

1887, was followed by Siegert's 'Problematic Child-Natures' (595) in 1889, Strümpell's 'Pedagogical Pathology' (619) in 1890, Scholz's 'Character Defects of the Child' (579) in 1891, Közle's 'Pedagogical Pathology in the Education of the Nineteenth Century' (333) in 1893, and other books and pamphlets of kindred sort, while, since 1896, a journal bearing the title *Kinderfehler* has been published at Langensalza under the direction of Professor Chr. Ufer.

Child-types.—Siegert (595, p. 76), the text of whose essay is 'do not wantonly and forcibly destroy the forms of nature, do not burst rudely and destructively in upon the problematic child-natures that are developing according to their own laws,' sketches briefly fifteen types of children, viz., melancholy, angel or devil, star-gazer, scatter-brain, apathetic, misanthropic, doubter and seeker, honourable, critical, eccentric, stupid, buffoonly-*naïve*, with feeble memory, studious and *blasé*. These classes together, according to Siegert, constitute some 8 per cent. of all children, and teachers and the school-system are often responsible for their complete wreck or ruin, to say nothing of parents. Individual treatment here is the only means of change or salvation, and force is worse than nothing at all.

Strümpell has gathered together from adults (educated and ignorant), teachers and others having to do with children, some 300 terms descriptive of their faults and defects, with notes on their synonymy, application, classification, their importance, distribution according to age, sex, etc., and place of origin in the organism. The dialect dictionaries would certainly have furnished the author hundreds more epithets, at the very least, many of them much more picturesque than any in his list, but the number of such is almost endless, as under favourable circumstances language can name almost any peculiarity of the child, and child-types judged by these marks are as innumerable. And so many of these defects and faults belong to adults as well, that their characterisation as child-faults, because in childhood by stress of environment and surrounding they so often appear in exaggerated form, is very frequently altogether unjustifiable. Moreover, their importance as 'faults' is further impaired by the fact that the child plays with them as he does with everything else his mind is at all seized of, as is well shown by Groos in his 'Plays of Man.' The school of the 'pedagogical pathologists' has over-

estimated the value and importance of many of these 'defects,' the coining of names for which by adults is more dangerous as metaphysics than the child's simple vagary usually is or need be. And it must not be forgotten that it is the working, thinking adult who, all the time, is thus 'sizing up,' so to speak, the playing, dreaming child, whose flashes of wisdom or unwisdom are all too often writ large by nurse, parent, friend, or teacher. Still Strümpell is more optimistic than other writers, and believes that the developmental capacity of the intellect is so strong that few defects of the kind under discussion are utterly incurable.

For Scholz (579, p. 15), 'every child is, pedagogically speaking, to be considered mentally sound, that possesses a capacity of development favourable to the purposes of education in character and understanding.' The 'faults of character' he classifies according to the province of the psychic life in which they originate: 1. *Faults of feeling and sensation*,—here belong the melancholy, the sensitive, the capricious, the timid, the perplexed, the haughty, the proud, the stubborn, the vain, the saucy, the indolent, the easily moved, romantic, the mischievous child. 2. *Faults in the realm of ideas*,—here belong the stupid, the distracted, the volatile, the sluggish-minded, the precocious, the fanciful and fanciless, the curious and the secretive, the disorderly, the uncleanly and the pedantic child. 3. *Faults of willing and acting*,—here belong the restless, the awkward, the silly, the covetous, the collecting, the deceitful and the thievish, the disagreeable, the envious, the malicious, the cruel, the unchaste, the destructive, and the lying child. In all these matters it is important to know 'whether the fault arises from defect or from excess, for it is easier to abolish than to build anew.'

Dr P. Lesshaft (355, p. 16), who has paid special attention to the education of the child in the family, recognises six very marked types among the children who enter school, viz., the hypocritical, the ambitious, the quiet, the effeminate-stupid, the bad-stupid, the depressed. Upon the entrance of these several types into the new environment of the school one sees the force of heredity and family-*milieu* with which the teacher has to contend. All through life, if the early type be maintained, the hypocritical is under the influence of the diverse forms of lying and deceit, the ambitious controlled by the idea of superiority or greatness, the quiet by the forms of truth, the

other types by pressure of circumstances. All these types may appear very early in the child's life. That, even in the child, individual character is 'a particular combination of diverse characteristics,' and not the excessively simple thing we are prone sometimes to imagine it, normally and abnormally, is clear from the investigations of Vitali (668, p. 94) on the temperaments, feelings and tendencies of Italian school-boys and school-girls of the Romagna, the researches of Riccardi as to the distribution of self-love, ambition, pride, vanity, attention, studiousness, etc., among school children in Bologna and Modena; of Marro (404, p. 46) as to good, bad and medium conduct among the pupils in the gymnasiums and lyceums of Italian cities; of Professor Sergi (585) and others concerning the 'sense of order' in the school children of Arona, Samarate and other Italian cities; of Anfosso (13, p. 141) concerning honesty in school children, etc.

While Riccardi notes that the years 11-15 seem to bring with them a decrease in some of the good qualities (studiousness and attention, *e.g.*), and the child becomes less docile as regards the school and the teacher, it is interesting to find Professor G. B. Dal Lago, of Taranto, expressing himself as follows, in connection with the investigations of Professor Marro (404, p. 49): 'Up to 11 or 12 years children have, generally, no natural bent (indole); they rarely manifest personality, but like to be ruled, directed and corrected. Between the ages of 13 and 15 inclinations appear, and this period is the most dangerous. Animality and sensual wants manifest themselves, and reason is not sufficiently developed to act efficaciously as a check upon the instincts that pursue them. But after the fifteenth year the case is different, youths can be reasoned with, and, if natural talent aids, they are almost always to be saved by the persuasive word.' Riccardi considers that 'the nature of female education, the psychic character of woman, and the greater educative plasticity of the sex,' count for not a little in the more favourable showing girls make under the circumstances in question. It is often observed that with the best pupils the sex-differences are slight, the poor and bad pupils frequently showing the marked diversities.

Misoneism.—In an interesting article on the nature and causes of political crime, Lombroso has given utterance to the view that a law of inertia, which he calls *misoneism* ('hatred of

the new,' *neophobia*), governs the moral world. Everywhere he finds *misoneism*, it dominates in all ages, and among all peoples; language, institutions, customs, laws, all human thoughts and actions, like those of children and animals, can be explained only on the ground of constitutional *misoneism*. Misoneism is a physiological characteristic of humanity—*philoneism* or *neophily* ('the love of the new'), something pathological in the individual. Men must perforce crush or destroy him whose message is, 'Behold, I make all things new!'

To this idea Lombroso returns in a later essay, a pessimistic review of the achievements of psychiatry. Of the great mass of men in the world, he tells us, it may be said *fruges consumere nati;* they are the slaves of habits, words, sounds, even to these they sacrifice ideas and oppose research, discovery, truth, science. For this reason 'we live in the false, for the false, with the false; the true is only met with exceptionally in the world.' Sacrifice and suffering are the concomitants of all progress. Woman is subjugated and trained in deceit, the child is intimidated and schooled into conservatism.

M. S. Merlino, in his criticism of Lombroso's misoneistic philosophy, points out the fact that neophily and neophobia are of necessity relative terms, being but the oscillations of the pendulum of progress; they are derived phenomena, functions of the law of man's adaptation to his environment. In other words: 'Man is neither neophobic nor neophile by nature; from necessity he may be either.' The condition of progress, however, seems to be maintained by the preponderance of neophily over misoneism. Moreover, children and savages are not characteristically neophobic. If children have one peculiar capacity it is that of *extrinsecation*, 'that tendency to get out of themselves, to go beyond themselves, which the Germans call *Selbst-Entfremdung*, in English *self-estrangement*.' When they are not overwhelmed with rules, formulæ and methods, children, as their history in all ages and among all peoples shows, can learn almost anything, their power of imitation is almost infinite. As M. Merlino says, Lombroso forgets 'the insatiable curiosity of children, their charming importunity, their gracious prattle, the continual motion to which they give themselves up, to exercise at one and the same time their muscles and their thought, all their faculties and senses.'

Savages, like children, are 'curious and impressionable.' Lombroso, in his account of them, fails to note 'the penetration of their minds, their facility in learning languages, their love of novelties (remarked by ancient and modern travellers and observers), their admiration at objects of foreign manufacture.

William Ellis tells us that, even in the case of fire-arms (with whose deadly nature they were not unacquainted), fear was overcome by curiosity in the Tahitians. Cardinal Massaja, who was for thirty-five years a missionary in Ethiopia, tells of the eagerness with which the natives sought to be vaccinated, and Marsden reports a native of Sumatra as saying as he inspected a European clock: 'Are we not justly the slaves of a people able to invent and to construct so wonderful a mechanism.' Where they have not suffered from the injustice and cruelty of the higher races primitive peoples are rather inclined to welcome the white man, being no more afraid of him than the birds and beasts, who have not yet learned to flee before him. The women, too, of the uncivilised races, far from being more misoneistic, as Lombroso supposes, are often the first to welcome the stranger.

But all over the world there are neophiles and neophobes; men, women and children, savage or civilised, may be neophile in one thing, neophobic in another—likes and dislikes are older than the race itself. Even Lombroso, as Merlino wittily says, is 'neophile in anthropology, but neophobic in sociology.' Even amid the beginnings of human gregariousness, to say nothing of the complexities and multifarious phenomena of the social *milieu* of to-day, the individual instinct and reason (seen at work in every growing child) exclude Lombroso's sweeping generalities. Very often, too, it is a question not of an inherited tendency or quality, but of an acquired effect—'the methods of education and of civilisation have created the neophobes.' Neither the truancy of the child, nor the return of the educated savage to his original nakedness and forest shelter, is in itself a convincing proof of neophobia. In his self-chosen occupation the boy, and at home with his family in the forest the savage, gives abundant evidences of neophile tendencies both in thought and speech and deed.

The Criminal Child.—The criminal child has been best studied by Ferriani, whose volume contains statistical and

theoretical data of all sorts relating to juvenile crimes and offences. The author holds that, 'with few, few exceptions, the criminal carries the germ of his criminality with him out of his childhood' (202, p. 5); the thorough study of the child must reveal the source of most, if not of all, crime. Of all factors in the production of crime the greatest are criminal environment, bad parents, bad homes, bad food, bad companions, bad books, bad conversation, etc. Lack of shame, selfishness, vanity, cruelty, lying, jealousy, envy, gluttony, anger, hate, idleness, vagabondage, self-abuse, prostitution, excessive work, carelessness, and bad example of the well-to-do classes, illegitimate parentage, suggestion, imitation, heredity, alcoholism, imbecility, are other powerful stimulants or causes of crime, which vary much with epoch, climate, race, sex, age, individual.

The trinity of criminality, according to Ferriani, consists of 'the inherited tendency to crime, alcoholism and idiocy,' from whose sway society is all too slow to rescue the growing child. The general belief that girls resemble bodily the father, boys the mother, may account for the fact that girls are dearer to the father, boys to the mother. Passions and criminal tendencies are as inheritable as any somatic characteristics. Ferriani cites with some approval the declaration of Ferri: 'Men from the lowest and most anti-social strata are criminals from innate, irremediable tendencies.'

Among the factors for which the child is in some sense himself responsible, gluttony and vanity are prominent, the one inciting to minor, the other to greater offences. Gluttony is, in some respects, the cardinal sin of childhood, and is a fertile mother of theft. Even among well-to-do school children this tendency breaks out. Here again, however, girls steal less frequently than boys. Ferriani gives the following figures from a boys' school and a girls' school for the period 1889-1892:

Out of 512 boys 209 were gluttonous—thefts, 62.

Out of 287 girls 124 were gluttonous—thefts, 26.

Vanity and boasting often play a very considerable *rôle* in the production of juvenile crime. Maironi observes: 'It is certain that to many youths the wish to make sport of justice, and to compel the authorities to busy themselves with them, leads by way of boasting to an irresistible tendency to evil-doing.'

Out of 150 minor criminals Ferriani found that 15 were

repentant, 48 indifferent, 70 boastful and pleased at publicity, while 17 despised justice (202, p. 27).

Idleness.—The proverb, 'Idleness is the father of all crimes,' is, according to Ferriani (202, pp. 144-155), peculiarly applicable to childhood, for which idleness has native charms. Moreau says that 'idleness and vagabondage are almost always, with children, the source of crime.' Children do not need a prison so much as an occupation; and Corre holds that 'crime, like prostitution, is nourished by idleness.' The following table gives the figures as to idleness concerning 2000 minor criminals studied by Ferriani:—

Age.	Altogether Idle.	Half-Idle.	Active, but not fond of Work.	Like Work.	Like Work from Fear of Punishment.
8-10 years . .	217	100	15	3	19
10-14 ,, . .	380	175	25	12	8
14-18 ,, . .	283	75	40	20	4
18-20 ,, . .	232	195	152	44	1
Total . .	1112	545	232	79	32

Out of 2000 young criminals, 1112 were completely idle, with a maximum of idleness at the age of eight to ten years. Even more significant is Ferriani's report of his personal investigation of 145 criminal girls and 225 criminal boys as to the reason of their idleness:—

Answers of Girls . . . 145	Answers of Boys . . . 225
We are good for nothing . . 14	We are good for nothing . . 48
Work is wearisome . . . 15	Work is hard 22
Our mother does not work . 10	Our father does not work . 25
Our father is a beggar . . 12	... ...
We will work when we are 'big' 6	One must not always work . 6
Begging is nicer, for one can walk about at the same time. 15	Begging is work . . . 14
We eat little, why should we overexert ourselves? . . 7	Our parents tell us that only the stupid work . . . 19
When at work one cannot run about 9	... ...
Even begging costs effort . 22	We run round all day (to beg), and have no time to work . 8
Work and earn almost nothing. 6	One earns more by stealing . 10

Answers of Girls . . .	145	Answers of Boys . . .	225
There are soup-kitchens . .	4	Beggars live well . . .	36
We have worked too much; we are tired	7	We were dismissed by the master, why should we work? .	18
Doing nothing is so fine . .	18	Doing nothing is a constant pleasure	19

Prostitution.—The statement of Lombroso and Ferrero that 'crime and prostitution are the two forms, masculine and feminine, of criminality' has been disputed by Ferriani, who holds, with Florian, that, anthropologically considered, prostitution stands with male crime, but not psychologically: 'The criminal is driven to the deed by anti-social tendencies, by egoism; the woman is often impelled by hunger, by the poverty in which she lives, with no one to support her or to lead her among the thousand temptations which surround her, to become a prostitute.' 'Once a thief always a thief' runs the proverb, but disgust at her trade often overtakes the prostitute; men and women pity a prostitute, but hate a murderer. Bad example and bad surroundings, as Sighele and others have well shown, are the fertile creators of prostitution. There were in 1881, in Italy, 10,422 inscribed prostitutes (aged 17-20 years, 2953; 20-30 years, 5456; 30-40 years, 1588; over 40 years of age, 425). Of these 8393 were unmarried, 1358 married, and 671 widows. The reasons given by themselves for taking up the prostitute's trade were as follows (202, pp. 160-165):—

Seduction by lover	1653
Seduction by employer	927
Abandonment by husband, 'parents,' or other members of family	794
Loss of husband, 'parents,' or other supporter of the family; or from poverty	2139
Support of children, 'parents,' or other poor or sick members of family	393
Instigation or depravity on the part of 'parents,' husband, or other persons of the family	400
Instigation of lover, or other person apart from the family .	666
Crime or depravity	2752
Luxury	698

'I never despair of youths who honour their mother,' says Ferriani (202, p. 202), and it is 'children of unknown parentage —Garofalo maintains that nine out of every ten such are illegitimate—that go to swell the population of jail and prison.' The following table shows the attraction which criminality has for such children:—

Social Condition.	Number of Persons.	Relation to Crime.
Of legitimate birth . . .	200	1%
Of illegitimate birth . . .	200	2%
Of unknown parentage . . .	200	2½%

Among 3000 minor criminals, Ferriani found 162 cases of unknown, and 101 of illegitimate parentage.

Suggestion and Imitation.—Suggestion and imitation, moral infection and contamination, are very powerful factors in the production of juvenile crime. In politics, especially in democracies, the evil results of the ever-recurring statement 'you would have done just the same thing had you been in my (or his) place' are patent, and the politician's excuse is the criminal's, with the same end, the dulling of resistance to unrighteousness and crime. The offences of such children as have continually only bad examples before them are largely due to imitation, and the case is much worse if it be true that the child has a natural tendency towards the bad. Sighele shows the influence of a single criminal in a group of two or more individuals, and the criminal leaders of groups of boys figure in all records of the darker side of city life; often a boy, but a year or two older than the rest, is 'the secret soul, insinuator, and leader of the whole undertaking.'

Sighele, from whose studies Le Bon and Tarde seem to have borrowed not a little, or at least sought and found inspiration, considers that 'suggestion is one of the principal factors in criminal association, if, indeed, it is not the unique factor' (598, p. 19). The criminal couple is the criminal crowd reduced to its simplest terms (double suicides, double lunacies, assassinations and other crimes for love, etc.), unless we admit here the obsessions, *succubi* and self-struggles of weak and degenerate personalities. In love, suicide comes first, then homicide, and with primitive peoples much the same state of affairs seems to exist.

In all Italy from 1880 to 1885 there were convicted of crimes against person and property 35,362 individuals, of whom 4825 were under 21 years of age, 1505 under 18, and 39 not yet 14, and for petty offences the record is much worse. Conti attributes this juvenile depravity to the influence of three

factors—the natural, the social, the individual—which practically, however, reduce themselves to two—heredity and family—the vast importance of which is emphasised by his detailed study of 150 children (average age 15-19) in the Royal Institution for Juvenile Offenders at Bologna. The majority of these children were imprisoned for vagabondage or paternal correction, only 37 cases of real crime being noted, though unnatural offences and masturbation were very common. The absence of argot and the infrequency of tattooing (three cases only, religious symbols on the fore-arm) are striking. Another interesting fact is that 27 per cent. belonged to somewhat numerous families, and 10 per cent. were born of parents who had been twice married. Of defectives there were among the 150 a hunchback, a deaf-mute, a cretin, 2 epileptics, 2 cripples, 3 afflicted with seminal losses, 5 scurvy, and 6 idiots.

Setti, who deals with the crime of Bologna in 1887—of 957 minors accused, about two-thirds had parents, and the boys were five times as numerous as the girls—found that vagabondage was the chief offence, and that education is but an insufficient defence against the three great factors of juvenile crime—abandonment, poverty, example. From vagabondage to theft is but a step, and the steps after that are easier still. Family and *milieu* account for very much—at home, poverty, sickness, alcoholism; in the street, corruption of all sorts. The child begins to roam about and falls into ways of evils he is utterly unable to resist. The Italian statistics generally speak eloquently in favour of the great power of the home-surroundings and right suggestion in the prevention of crime and criminals.[1] Suggestion, if we believe Professor W. von Bechterew, who has written of its *rôle* in social life, is by no means correlated with the degree of intellectual development of the subject. Much in the life of the adult must undoubtedly spring from the suggestion-influence experienced in early childhood.

Nature of Youthful Crime.—The field of youthful crime is, in certain respects, quite limited. Ferriani observes: 'The principal forms of youthful crime are two—theft and wounding (or killing)—with a strong preponderance of the first, for, independent of all other considerations, the child making his first criminal steps begins ninety times out of a hundred with theft'

[1] *Arch. de l'Anthr. Crim.*, III. 368.

(202, p. 245). Indeed, it may be said that 'from eight to fourteen years the child is almost always a thief,' and from fourteen to the close of childhood's minority the thieving still predominates, though woundings, etc., now occur frequently.' But the particular forms and expressions of child-crime vary with or are metamorphosed according to the social environment, forgery, cheating in trade, etc., requiring some little education, or social position, in order to make it possible for children to indulge in them to any great or deliberate extent. The crimes committed by 2000 minor criminals studied by Ferriani were as follows (many children figure several times for different offences) :—

Crimes against the person (killing, 120; wounding, 736)	1102
Crimes against good morals and family order	198
Crimes against the State	4
Crimes against liberty (disturbances of the peace)	14
Crimes against freedom of work (strikes)	16
Crimes against public authority (resistance, etc.)	79
Crimes against the administration of justice (hypocrisy, perjury, slander, etc.)	63
Crimes against public order (conspiracy and incitement to crime)	37
Crimes against public confidence (forgery, etc.)	36
Crimes of public harm (arson, injury to public ways)	93
Crimes against property (theft, robbery and unjust appropriation, 1332 ; receiving stolen goods, 301)	1751
Crimes against penal code and against some special laws (begging, 101 ; gambling, 26 ; drunkenness, 17, etc.)	442
	3835

Average number of offences per individual, 1.9175.

The statistics concerning 2000 minor criminals, based upon a dozen years' study and observation by Ferriani, are given below in condensed form, and with somewhat different arrangement from that of the author. They indicate at a glance the chief characteristics and peculiarities of child-crime in Italy :—

STATISTICS CONCERNING 2000 MINOR ITALIAN CRIMINALS (FERRIANI).

SEX—	
Male	1540
Female	460

AGE—

8-10 years	351
10-12 ,,	240
12-14 ,,	350
14-16 ,,	465
16-20 ,,	594

FAMILY—

Of bad reputation	701
Completely depraved	169
Of uncertain repute	53
Bad examples	896
Presence of condemned parents or relations	207
Complete misery	1758
Children (relapsed) returned from institutions	1604

PARENTS OR RELATIVES PUNISHED FOR—

Murder and homicide (wounding)	32
Cruelty to children	41
Offences against morals	38
Resistance and riot	60
Theft and unjust appropriation	141
Fraud	42
Carrying dangerous or forbidden weapons	112

EDUCATION—

Able to read and write	1336
Had further education	325
Had higher instruction	129
Analphabetic	210

NATURAL DISPOSITION OF CRIMINALS—

Altogether idle	1112
Half-idle	545
Active, but not fond of work	232
Fond of work	79
Like work from fear of punishment	32

CRIMES AGAINST PERSON—

Homicide	126
Wounding	736
Cruelty, slander, insult	244

MORAL—

Offences against morals, sexual immorality, etc.	198

CRUELTY AND DESTRUCTION—

Killing animals	15
Cruelty to animals	17
Disturbance of peace, insult to and resistance of authority	251
Arson	79
Injury to public and private property	67

THEFT AND FRAUD—	
Theft	1182
Gleaning on others' land	97
Robbery	10
Fraud, extortion, unjust appropriation, etc.	138
Receiving stolen goods	301
DECEIT, FORGING, ETC.—	
Shamming crime	26
Slander	15
Perjury	18
Counterfeiting and forgery	33
Begging	101
Carrying forbidden weapons	45
Drunkenness	15
Miscellaneous	188

Mathieu, in his account of the French 'criminal child' (417), notes the alarming increase of juvenile crime in the last 50 or 60 years. During the period 1830-1880 the number of minors between the ages of 16 and 21 accused of crime had quadrupled, while that of adults has increased three-fold; in 1881-1893 the number of child-criminals increased $\frac{1}{4}$th as compared with an augmentation of $\frac{1}{9}$th for adult offenders; the amount of prostitution among minors seems to be on the increase, amounting to 40,000 in the last 10 years; the suicides of children and youths have also increased, for in 1836-1840 the number of suicides of children under 16 years of age was 19, while during 1881-1894 it has increased from 51 to 75; the number of suicides of individuals between the ages of 16 and 21 has augmented from 128 in 1836 to 243 in 1880, and 450 in 1894. The only optimistic sign in the criminal horizon seems to be the fact that the number of young criminals for the year 1895 is 30,763, against 32,317 for the previous year, a slight oasis in the long desert of increase.

The children of the criminal quarter of the city of Lyons, in France, have been made the subject of a special study by Raux. Only 13 per cent. of these young criminals seem to have been bad in spite of good influence and moral education, the enormous *rôle* of social and family environment being revealed by the fact that 87 per cent. seem to have been led into crime through the bad character, weakness, cruelty, indifference, etc., of their parents, though doubtless many of these must have been hereditarily tainted and infected. The precocity of child-criminals appears in marked fashion, 76 per

cent. being between 13 and 16, 21 per cent. between 10 and 12, and 3 per cent. even between 6 and 9 years of age. Of the crimes charged 19 per cent. were offences against the person and 61 per cent. against property. M. Raux notes that children whose offences are of a very grave character are in reality less vicious than 'young habitual vagabonds.' In the case of the former, moral reformation is possible, but the latter, poisoned by association with bad and immoral persons, have become regular gallows-birds. It is interesting to learn that out of 100 released, 61 behave themselves well, 13 passably so, 26 are lost sight of altogether (526).

Pfeifer states that apart from the comparatively rare offences against morals, the criminality of German school children can be classed under two heads, viz.: 1. Outbreaks of savagery and rudeness; 2. Thieving of diverse kinds. The general increase of juvenile crime in Germany, and the relation in which it stands to the crime of adults, can be seen from the following statistics given by Pfeifer (491):—

Out of 100,000 Persons aged 12-15 years, there were sentenced—			Out of 100,000 Persons aged 15-18 years, there were sentenced—		
Offence	1883	1889	Offence	1883	1889
Setting fire . .	2.3	2.5	Setting fire . .	2.7	2.2
Forcible lewdness	4.2	5.5	Forcible lewdness	15.7	19.8
Simple theft .	237.7	269.3	Simple theft .	335.4	344.2
Robbery . .	34.6	42.7	Robbery . .	51.4	59.6
Embezzling . .	13.0	16.3	Embezzling . .	40.2	43.6
Robbery . .	0.5	1.0	Robbery . .	1.3	1.5
Receiving stolen goods . .	10.2	16.6	Receiving stolen goods . .	16.2	18.0
Fraud . . .	10.3	14.0	Fraud . . .	32.7	42.5
Forgery . .	2.4	3.4	Forgery . .	9.0	11.9
Injury to property	22.0	26.8	Injury to property	32.8	44.5

In 1889, of the crime between 12 and 18 years, the proportion between 12 and 15 years was :—

Sex.	General.	Forcible Lewdness.	Simple Theft.	Robbery.	Setting Fire.
Male . . .	36.8	22.0	48.2	43.7	43
Female . . .	33.4	42.9	36.6	36.5	19

It thus appears that for both boys and girls the most criminal period is from 15 to 18 years.

The proportion of youthful (12-18 years) to adult individuals sentenced in 1889 for offences against the imperial laws of Germany was as follows:—

	All Offences.	Theft.	Robbery.	Setting Fire.	Moral Offences.	Embezzlement.	Fraud.
Adults	90	79	75	68	78	89·3	91·5
Youth	10	21	25	32	22	10·7	9·5

The conditions of juvenile crime in English-speaking countries are embodied in the work of Morrison on *Juvenile Offenders*, published in 1897. In 1894, in England, there were 26 in every 100,000 of the juvenile population under 12 years of age convicted of indictable offences; for the period 12-16, the proportion was 261, for that between the sixteenth and the twenty-first year, 330. In New South Wales, in 1890, the number of juvenile offenders under 20 out of the total population was 3372; between 20 and 40 years, 22,174; aged 40 and over, 13,022. In England the proportionate frequency of certain offences at the age of 16, and at the age of 16-21 years, is as follows: Violence against the person, 1 : 2; offences against morals, 1 : 3 or 4; burglary, 1 : 4; simple theft, 1 : 1. In the year 1890 there were 23 homicides committed by children under 14 years of age, and 388 by individuals between the ages of 15 and 18, while the corresponding figures for England are 0 and 6 respectively. In the latter country there were, in 1893-94, 7 cases of manslaughter by individuals under 16, and 18 cases by individuals between 16 and 20. Of the habitual offenders under 16 years of age in England in 1890, 85 per cent. were boys and 15 per cent. girls (the proportion in the industrial schools was 70 per cent. and 24 per cent.), the corresponding numbers in the United States being 78 per cent. and 22 per cent. Of the boys released from the reform schools, 79 per cent. were 'doing well,' and of the girls 70 per cent., the corresponding figures for the industrial schools being 86 per cent. and 83 per cent. respectively. The inferior physical condition and greater mortality of industrial and reform school children is noted by Morrison, who also lays great stress upon environment as a

factor in criminality. Of the children in the reform schools in 1891, there were unable to read or write 17 per cent., able to read and write imperfectly, 70 per cent., with an ordinary common school education, 13 per cent.; of the children in the industrial schools in 1887-91, 2 per cent. were habitual criminals, 6 per cent. were deserted by their parents, 20 per cent. dependent on the mother, 14 per cent. dependent on the father, 4 per cent. had neither father nor mother, and 53 per cent. were either partly or wholly orphaned or had criminal parents. In some respects England and the United States seem to show an improvement in the amount and distribution of child-crime—indeed, England has been looked to as 'the one bright spot' in all the horizon of juvenile crime. The unbiased study of the statistics, however, does not seem to be as encouraging as many would lead us to believe.

Roussel, in his study of orphan asylums and other child-saving institutions, has tabulated the punishments and their cause per 100 children during a period of 20 years (1860-1879), together with the rewards for good conduct during the same time; the data are from the two reform schools of Ruisselède and Beernem in Belgium (404, p. 58):—

	Boys.	Girls.
Punishments	31.1	25.7
Rewards	31.3	31.7
Punishments due to altercations, etc.	53.90	17.4
,, ,, idleness, negligence	1.80	21.3
,, ,, lack of neatness	10.70	24.7
,, ,, unbecoming speech	0.41	14.6
,, ,, indecent acts and speech	1.00	0.24
,, ,, refusal to work	0.82	1.26
,, ,, infractions of discipline	19.00	19.9
,, ,, theft and attempts to steal	9.60	0.0
,, ,, attempts and plots to desert	1.70	0.0
,, ,, desertion	0.72	0.0

So far as good conduct (rewarded) is concerned, girls and boys appear to be about on a level, while of distinctly bad conduct (punished) the latter show a considerably larger proportion than the former, with whom also the character of the offences leading to the infliction of the correction was less grave.

As Dr Marro notes, the boys excel in active, positive offences, altercations and fights, thefts, the only active offence in which the girls notably surpass the boys being 'sins of the tongue.' The offences in which the girls excel are passive or negative ones, such as idleness, negligence, lack of cleanliness and neatness, etc. (404, p. 65). Herein they resemble certain primitive peoples.

Anfosso, who has made some investigations of the sense of honesty among Italian school-children, comes to the general conclusion (13, p. 141): 'Honesty is altruism. It is not produced completely new in the child by the influence of environment, education, etc., but is inherited in germ at least, developing itself first, however, toward the fifth or sixth year of life with the co-operation of the outward world. As in the embryo the phylogenetic development is repeated briefly in the individual, so in childhood and youth the individual runs through the various stages through which the race has passed in the progress from unlimited egoism to altruism.'

Here we can trace the growth out of that selfishness which is the one trait of childhood to that altruism which is, in like manner, the one trait of youth.

Suicide.—Durkheim, in his recent study of suicide (181), attributes the suicides occurring among primitive peoples to weak development of individuality, styling them altruistic as contrasted with egoistical suicides. The parallel here is between the soldier and the primitive races of men, with both of whom the military spirit and a kind of altruism are held to dominate. But this view is hardly tenable.

Corre, who has written an excellent monograph on 'Crime and Suicide,' comes to the conclusion that 'insanity and suicide increase with civilisation,' a view entertained also by Morselli, and perhaps the great majority of modern writers on the subject. Dr S. R. Steinmetz, from a careful examination of the ethnologic data concerning primitive peoples, disagrees with the opinion that suicide is exceedingly rare among the lower race of men, and observes: 'It seems probable . . . . that there is a greater propensity to suicide among savage than among civilised peoples, and that its frequency may be owing to the generally more positive faith in the future life existing in the former races, which enables them to meet death with greater calmness and a slighter resistance of the instinct and other natural motives tending to conservation of life, and finally the

question suggests itself, that if suicide is one of the positive symptoms of moral degeneration, as Dr Winkler suggests, is it possible that moral degeneration is taking place among the primitive peoples?' (614, p. 60).

Dr Steinmetz's view, that suicide is by no means infrequent among primitive peoples, is corroborated by the statement of Col. Mallery concerning the American aborigines (394, p. 132): 'Suicide is more common among Indians than is generally supposed, and even boys sometimes take their own lives.' A Dakota boy at one of the agencies shot himself rather than face his companions after his mother had whipped him, and a Pai-Ute boy at Camp McDermott, Nevada, tried to poison himself with wild parsnip because he was not well and strong like the other boys. The Pai-Utes usually eat the wild parsnip when bent on suicide. It is interesting to find that children commit suicide among primitive peoples often by taking vegetable poison like women. Suicides of girls 'because of jealousy, or from fear of marriage to those whom they do not love,' is common among the Dakotas and other Indian tribes (614, p. 55).

The reasons for suicide among primitive peoples are often strikingly similar to those among children—fear of accusations, shame, disgrace, threats, scoldings, punishment, disappointment, jealousy, brutal treatment, offended honour, illness, grief, etc. Of 49 cases of suicide among primitive peoples, recorded by various authorities, Steinmetz gives the causes as follows: Love, sorrow and related emotions, 20; offended pride and sensibility, 13; fear of slavery and captivity, 5; depression and melancholy (from sickness, disappointment, etc.), 7; family quarrels, 4.

Out of 289 cases of suicide of school-children in Prussia during the period 1883-1888, the chief causes, as given by Scholz (579, p. 160), were as follows: Fear of examinations and other reasons connected with school, 3 (boys 3, girls 0); injured ambition, 19 (boys 18, girls 1); fear of punishment, 70 (boys 46, girls 24); harsh, undeserved treatment, 13 (boys 10, girls 3); vexation, despondency, etc., 8 (boys); weariness of life, 7 (boys 6, girls 1); misfortune in love, 5 (boys 4, girls 1).

The *sang-froid* and premeditation which, according to M. Durand-Fardel (179), so often characterise child-suicides afford another parallel with primitive peoples, for with both the child and the savage an overpowering fear of death is absent.

It is worth noting here that Dr Tautain[1] reports that among the natives of the Marquesas Islands, of Polynesian stock, 'suicide is almost confined to women,' vegetable poison being the method employed. The reasons given for these suicides are wounded *amour-propre*, and a desire to be avenged upon the offender, rather than a wish to end one's existence.

According to recent writers (183, p. 332), among civilised peoples at least, women show greater precocity in suicide than men, while the great increase in child-suicides, as compared with a century ago, may be only a passing phase of present civilisation, and not a permanent accompaniment of human progress in evolution—one that, like divorce, will ultimately normalise itself again.

Lying.—There are some phenomena of childhood that in all ages have found denouncers, and defenders have been looked upon as quasi-criminal.

An old proverb (found in English—'Children and fools cannot lie'; 'Children and fools speak the truth'; 'Children and drunken people tell the truth.' German—'Kinder und Narren sprechen die Wahrheit.' Greek—'Children and fools speak the truth') declares that children are incapable of lying. Mme. Necker, however, did not hesitate to say: 'Children, so ingenuous, so *naïve*, are not always exactly true; they dissimulate innocently, if one may say so, and there is in them a singular mixture of *finesse* and *abandon*.' Again: 'A sort of ruse seems innate in children; they have learned to avoid falsity in words, while they still lie in actions' (455, I. p. 173).

Guyau declares that 'fiction is natural in children.' Nay, more: 'The lie is most often the first exercise of the imagination, the first invention, the germ of art.' Indeed, 'the lie is the first childish romance, and its object often is to embellish reality; the romance of the philosopher, which is the metaphysical hypothesis, having ordinarily the same object, is sometimes the highest of fictions.' The same authority modifies his opinion just a little when he observes: 'The child is naturally inventive, without troubling himself about the reality of what he relates, when he is but slightly hypocritical or dissimulating. Dissimulation, which is real lying, *moral lying*, is born in children only through fear' (259a, p. 148).

[1] *L'Anthrop.*, IX. p. 103.

Dr G. Stanley Hall, in his study of 'Children's Lies' (274), has collated the results of the tactful investigation of '300 children of both sexes between 12 and 14.' Seven kinds of lying are reported, as follows:—

I. Systematised palliatives, insertion of qualifiers, casuistic word-splitting—the result of *pseudophobia*.

II. The lie-heroic—lies to justify noble ends, false confessions, theoretic or imagined self-sacrifice, etc.

III. Truth for friends and lies for enemies—the subordination of truthfulness to personal likes and dislikes.

IV. Selfish lies—cheating and false claims in games at school, false excuses, etc.

V. Imagination and play lies—imitation, mimic pantomime, 'making belief,' 'imaginary companions,' naming, comparing, etc. Much childish play owes its charm to self-deception.

VI. Pseudomania (pathological lying)—'passionate love of showing off,' false pretences, acting parts and attracting attention, fooling, humbugging, etc.

VII. Palliatives for lying that wounds the conscience, reiterations, repeated asseverations, reversing or neutralising lies to one's self.

President Hall concludes that 'some forms of the habit of lying are so prevalent among young children that all illustrations of it like the above seem trite and commonplace. Thorough-going truthfulness comes hard and *late*, and school life is now so full of temptation to falsehood that an honest child is its rarest as well as its noblest work.'

Ferriani emphasises the diversity and characteristic nature of children's lying as opposed to the popular view of their 'innocence' of all such offences, what Bourdin calls 'the myth of the infallible openheartedness of the child' (202, pp. 48-126). Children find it very easy to say 'no' and 'not,' and many 'lie in order to lie.' The distribution (according to origin) of the lies of 500 minor criminals, personally observed by Ferriani, is as follows:—

1. From instinct and weakness	472	6. From jealousy, envy, revenge	195
2. In self-defence	401	7. From fancy and imagination	488
3. To ridicule others (vanity, self-love)	360	8. From laziness	370
4. From imitation	230	9. From magnanimity	29
5. From egoism	387		

The great *rôle* of the imagination and the comparatively insignificant part played in the production of lies by magnanimity are noteworthy, as is also the great preponderance of boys among child-liars.

Lying is, perhaps, only one form of the deceit by which creatures seek to protect themselves.

'Animal nature is one immense school of ruse and deceit,' says Félix Plateau in his essay on 'Protective Resemblance.' Everywhere (sea, desert, forest) is this imitation, which, however, is largely unconscious: 'The phenomenon of protective resemblance is general; there are hardly any animal forms which, at least in one of the phases of their existence, have no recourse to imitation. In our countries, in temperate Europe, in Belgium, one meets at every step cases of dissimulation, yielding in nothing to those of tropical nature' (495).

Gelmini (241, p. 342) emphasises also the deceit, dissembling, pretence, hypocrisy and 'seeming' of all the lower orders of nature, as means given to the weak and feeble in order that they might survive in the struggle for existence, for where strength would fail victory comes from artifice. This same tendency to artifice and dissimulation, Gelmini thinks, is very strong with primitive and barbarous peoples, among whom lies, imposture, falsities of all sorts, flourish, and who (to judge by the experience of the Italians with the tribes of North-Eastern Africa) are double-faced, faithless beyond comprehension. So, too, the lower classes and the ignorant and criminal among civilised peoples, with their superstitions, mystifications, jugglerie and deceptions innumerable—the preservation, as it were, of the strata of savagery and barbarism. It would take a long time, also, to catalogue the lies and dissimulations of the most cultured classes of the most civilised communities, the deceits and hypocrisies of the family, of society, of fashion, of wealth, of friendship, of learning, of trade, of art, of industry, of science even, and of religion, with its creeds and ceremonials. In a word, men and women 'lie with their feelings and emotions, with their thoughts, inclinations and dispositions, with their words and their deeds'—all are more or less liars, as the old saying has it. The environment into which the child is born is well suited in the great majority of cases to teach him the advantages and uses of lying. Women are more given to lying and deceit than men (the ignorant more than the cultivated and educated), boys less than girls, according to this author.

With children lying is largely a means of self-defence, as it is with animals; it is at first, without malice, a handy expedient for avoiding trouble and getting along in life with the least expenditure of effort, and a great deal of ingenuity may be employed before real hypocrisy is consciously manifest. Certain ingenious phenomena of lying in children of from four to six years of age, and even with children of seven or eight years, are 'means of defence,' and become fixed and ineradicable only through environment and educational causes; otherwise a salutary transformation takes place in most of them, whom fashion, customs, laws, etc., do not succeed in corrupting altogether with their education in deceit and subterfuge. Some of the 'deceits' of children plainly indicate their nature as protective devices—such, *e.g.*, as keeping quite still, pretending to sleep, putting on a face, imitating the actions, posture, speech, etc., of others. In girls the disguising and dissimulation of feelings and thoughts is even more ingenious than is the case with boys, and exhibits often even more clearly the 'protective' aspect. During this period the plastic minds of children are subject to the play of the environment, and not alone the fear of punishment but many other factors enter into the fixation of their lying and deceiving as permanent characteristics; example is here all-important. But if the environment is honest, noble, truthful, just and sincere, the happy transformation takes place in the years of adolescence and youth, when arise the strength and the glory of love and truth, the despisal of artifice and circumlocution; the beauty of sacrifice replaces the necessity of self-defence, the child with the 'protective' mask becomes the youth with the serving soul. As aids to this end society needs the father and the mother whom it is safe for the child to imitate, the teacher who is not bound to rule by fear but by personality, who knows rather how to evoke the good than to exorcise the bad, to create atmospheres of truth, rectitude, justice, rather than to attempt the destruction of evil individualities that are more or less transitory and evanescent. There is much truth in Gelmini's very suggestive essay, though he overestimates the amount of lying and deceiving practised by primitive man.

The testimony of children has fallen under the strict condemnation of many writers, who have no faith in the folk-ideal of the innocent child whose every word and action bespeak truth. Le Bon (351, p. 35) observes: 'Better would

it be to settle the condemnation of an accused person by "heads and tails" than to decide it, as has been done so many times, on the testimony of a child.' The subject has been discussed in detail by Rassier and Motet, while Mr M. H. Small's paper on 'Methods of Manifesting the Instinct for Certainty' contains not a little of interest with respect to evidence, asseveration, pledges, oaths, etc., their individual and social significance among children, primitive races, and the various classes of civilised communities. It is probable that the truth-telling capacity, under right conditions, of the child uninfluenced by his scheming elders or fellows, like that of the savage, has been underestimated. The statement of so excellent an authority as Dr Washington Matthews (419, p. 5): 'As the result of over thirty years' experience among Indians, I must say I have not found them less truthful than the average of our race,' would apply to many other primitive peoples as well. A proper understanding of motive and action is necessary with the child and the savage.

Ethical Dualism.—The dualism of ethics, which is characteristic of so many primitive peoples, has been discussed by Kulischer (338), who points out how common has been in the world the idea of law and all the protective devices of society for the members of one's own fellowship or tribe, but just the opposite for those of any other. Not alone the annals of war and conquest, the story of trade and commerce, but the history of religion as well is full of illustrations of this ancient theory. As Dr D. G. Brinton observes (74, p. 59): 'In primitive culture and survivals there is a dual system of morals —the one of kindness, love, help and peace, applicable to the members of our own clan, tribe or community; the other of robbery, hatred, enmity and murder, to be practised against all the rest of the world; and the latter is regarded as quite as much a sacred duty as the former.' It can easily be seen from these facts how 'ethics,' while a powerfully associative element in the one direction, becomes dispersive or segregating in others, unless the sense of duty is taught as a universal and not as a class or national conception.

This practice of 'aid, kindness, justice, truth and fair-dealing' towards one group of individuals or of peoples, and of 'enmity, hatred, injury, falsehood and deceit' towards the other, is present in well-marked survivals among even the most civilised and religious nations to-day (77, p. 228). The 'spoiling of the

Egyptians,' the proverb *caveat emptor*, the theory of a private and a public code of morals, the continuance of smuggling and the robbery of Governments by public servants, the lottery that still exists in the name of charity and the church, the 'deals' and tricks of the caucus and the political machine to which the 'good citizen' so readily submits, the defence of a 'brother' at all hazards and with an utter disregard of law and justice by some secret societies, the 'honourable lying and noble deceit' gloried in by the fornicator and the adulterer, the fraud practised upon women before and after marriage, the widespread concealment of certain facts from children and youth, the signing of a creed by a minister who is far from believing its evident significance, and his 'one word for the congregation but another for his intelligent fellows'—all these things, and many more, show how far we are still from the ideal of loving our neighbour as ourself. Not only does this dualism of ethics occur by survival in communities of civilised adults, but it is often one of the marked characteristics of childhood. An interesting instance is recorded by Miss Lombroso (369, p. 77) of a boy of ten years who proposed to spend a piece of counterfeit money (given him) in a village 'where no one knows us.' The school-gangs, ward-gangs, secret societies of children, etc., in our great cities, offer numerous other examples of this duplex code of morals. Other sources of such illustrations are public and private schools, city children in the country, college-games and the like.

The analogy between the 'boys'-gangs' of cities, in the matter of ethics especially, with the primitive tribe or horde, has been very recently enlarged upon by Mr T. J. Browne (85). Mr Browne notes the double ethics, the consideration of strangers as enemies (who may be maltreated, lied to, or deceived), the stealing and predatory impulses combined with fidelity and stern repression of cowardice and 'peaching' with respect to the gang, and the primitive activities primitively regulated—hunting, fishing, swimming, bird-nesting, orchard-robbing, hiding in the woods, etc. Here activity rather than imagination rules. And a cowboy rather than the *naïve* liar of early youth is the result.

The power which this double system of ethics still has in certain walks of modern society is well brought out in Proal's *Political Crime* (514). The practical result is the divorce of morality from politics; in some ways the doctrine of one

private morality and another and different public one is more insidious than it was among the ancient Greeks, although it clearly does not pay, even according to rude utilitarian standards. According to Proal, state-interests cloak all sorts of iniquities which the private conscience really abhors—the deaths of philosophers and men of science, the martyrdom of Christians, the extermination of conquered races, the slaughter of mobs, etc. It is typified in a Bismarck who would not kill a fly in his study, but superintended the machinery which annihilated thousands on the battlefields of a great war.

'Lucky' Criminals.—An aspect of crime, to which society has not yet attached sufficient importance, for the cumulative effects of its influence are too often evident to the careful investigator, has been well studied by Ferriani in his volume on *Cunning and Lucky Criminals* (203). It is hard to estimate the full amount of damage done to society by the dishonesty that cannot be punished by law and the crimes that go unwhipped of justice — the result of the little lawless *imperium* within the great *imperium* of law. The fraud, the trickery (white-gloved so often), the pimping, the blows of mind and body that meet with no remorse, suffer no penalty or punishment, the illusions, the suggestings, the broken faith, the flattering promises—all these form an environment that can soon turn even well-born and well-minded children to ways of more open and audacious crime. Who can estimate the influence upon the growing child of the five classes of delinquents which Ferriani treats of—the unknown criminals; those known but tolerated, even encouraged, by degenerate customs of the day; those acquitted on account of insufficient evidence; those freed by cunning or luck; those condemned, but, thanks to their lawyer or their own good luck or astuteness, not at all in proportion to the crime committed? The accomplices of criminals are not always the dishonest; the best people, through misjudged humanity, to avoid trouble, for family reasons, through influence of politics, secret societies and the like, not infrequently create impunity for the delinquent. And a large amount of the 'crime' that is just outside the scope of law or legislative enactment is committed by children and youth. A 'cunning' child is often as admired of the populace as of its parents. But there seems to be a certain relativity even here. Says Dr Washington Matthews, in his brief essay on 'The Study of Ethics

Among the Lower Races' (419, p. 3): 'If we find a community of some 15,000 people wealthy and prosperous, living harmoniously together, having few quarrels, no murders, and yet no Courts of Law and no obvious punishments for breach of law, we may feel assured that they have some system of ethics which holds them together and makes them live like a band of brothers. Such are the Navahos of New Mexico.' For a thief no punishment exists—'if found with the stolen property he is expected to restore it, that is all.' With the Navahos 'the time is evidently not long gone by when with them, as among the Spartans, adroit theft was deemed honourable.' So also apparently with certain other crimes, 'there is no executive power to enforce obedience to laws or to punish offenders.' But there are among this primitive people incentives to right-doing, 'loss of favour for wrong-doing,' 'belief in bad luck,' etc. Pure feelings of benevolence, however, with the Indian as with us, prompt to many acts and services performed without the slightest hope or acceptance of reward. According to Dr Matthews, conscience also is a considerable restraining influence with the Navaho, much more than many writers have believed, especially among the more thoughtful and religious members of the tribe. Their asseverations, solemn protestations and religious declarations afford abundant proof of this, and when Torlino, the pagan Navaho priest, asked, 'Why should I lie to you?' appealing to the 'eyes' in earth, sky, night, sun, dawn, twilight, we feel with Dr Matthews that 'we have here in the eternal vigilance of many mysterious eyes a substitute for the All-seeing Eye and a distinct conception of the inward monitor.'

Corporal Punishment.—Dr G. Stanley Hall,[1] in his article on 'Moral Education and Will-Training,' cites from Richter the record of a Swabian schoolmaster, named Haberle, as an example of the severity which once prevailed in Germany in the matter of punishment—truly a remarkable count for 51 years and 7 months as a teacher: '911,527 blows with a cane; 124,010 with a rod; 20,989 with a ruler; 136,715 with the hand; 10,295 over the mouth; 7,905 boxes on the ear; 1,115,800 snaps on the head; 22,763 *nota benes* with Bible, catechism, hymn-book and grammar; 777 times boys had to kneel on peas; 613 times on triangular blocks of wood; 5001 had to carry a timber mare and 1701 hold the rod high—the

[1] *Pedag. Sem.*, II. p. 82.

last two being punishments of his own invention. Of the blows with the cane, 800,000 were for Latin vowels, and 76,000 of those with the rod for Bible verses and hymns. He used a scolding vocabulary of over 3000 terms, of which one-third were of his own invention.'

Against this punitory maximum Dr Hall, the gist of whose article is 'that only in so far as the primitive will of the child is wrong by nature are drastic reconstructions of any sort needed,' everything depending upon 'how aboriginal our goodness is,' and upon 'that better purity established by our mothers in the heart before the superfœtation of precept is possible,' ranges 'the now too common habit of coquetting for the child's favour, and tickling its ego with praises and prizes, and pedagogic pettifogging for its good-will, and sentimental fear of a judicious slap to rouse a spoiled child with no will to break, to make it keep step with the rest in conduct, instead of delaying a whole schoolroom to apply a subtle psychology of motive.' It may be true that 'even the worst punishments are but very faint types of what nature has in store in later life for some forms of perversity of will, and are better than sarcasm, ridicule or tasks as penalties,' but it is also a fact that very many primitive peoples, as Steinmetz shows in his voluminous but invaluable 'Ethnological Studies concerning the First Developments of Punishment,' have placed their reliance almost entirely upon 'sarcasm, ridicule and tasks as penalties,' and it by no means appears that in sparing the rod and the severe corporal punishments they have spoiled the child. Indeed, as Steinmetz says, the surprising phenomenon is the occurrence among so many people of a gentle yet positive education, markedly in contrast with the punitory systems (especially that of corporeal chastisement) in vogue amongst the civilised races of to-day, although, to be sure, stern discipline does find a place with a minority of these uncivilised peoples (613, II. p. 203). Punishment of the sort most commonly employed in the last few centuries of European and American civilisation (the contrasting of extreme militarism, perhaps, to the marionettism of the kindergarten) is certainly not the *modus operandi* of the greatest number of primitive peoples, with whom 'tender and even pampering treatment' is the rule and custom; some of them, indeed, like the sea-Dyaks, hold that the more unruly and troublesome the boy the more valiant and worthy the man (613, II. p. 108)—

a belief, allowing for the difference between a Malay pirate and a German or American philosopher, not so very remote from some of current doctrines as to high-school pupils and collegians much favoured in certain academic quarters at the present day. And the modern educational reformer, who inveighs against striking down the child's soul by rude mental processes, might do worse than claim kinship with the American Indian who declared that striking the child's body injured its soul. But not all the children of primitive peoples are of the violent, boisterous and unruly sort. Not alone of the Malays can it truthfully be said, 'their children are very well behaved towards Europeans, and are superior to the Western child in many like respects.'

According to Steinmetz, the origin of non-education and pampering of children among primitive peoples is manifold. Unrestrained love, precocity and early maturity, lack of strict norms and educational as well as moral ideals generally, the long association with the mother and her preponderating influence in the tribe (in the days of matriarchy), the life of the father outside the maternal home, the father's fear of his son (among those peoples who believed that the soul of the parent had passed into the new, young body of his son), and the need for the latter as heir and cult-preserver, etc. It is, therefore, not at all correct to say that the change from matriarchy to patriarchy was the sole, or always the chief, cause of the development of sterner methods of education and severe punishment of children among the more primitive races of man.

Zaborowski[1] criticises Makarewicz's attempt to derive punishment and justice from the primitive authority of the *paterfamilias* (the evolution of punishment consisting in the transference of this right to the tribal chief, then to the state), inclining to seek its origin in personal vengeance, acts which do not provoke the vengeance of anybody being looked upon as indifferent. Makarewicz's contention, however, that the three primitive forms of social reaction—public, social and instinctive vengeance; paternal authority, whence arise later family and tribal jurisdiction, concentrated always in the hands of a single individual; and sacerdotal jurisdiction, extending to all acts outraging divinity—may exist simultaneously or separately, is supported by much ethnographic testi-

[1] *Arch. de Neurol.*, 1898, p. 523.

mony, and the fact is not without example in the world of the lower animals.

Corporal punishment, in the shape of flogging or whipping, is, according to Morrison, not recognised by the penal codes of France, Italy, Germany, Austria, Russia, Switzerland and Sweden, while in some form or other it is part of the criminal law of England, Scotland, Ireland, Norway, Denmark and several of the British colonies (Victoria, New South Wales, Canada); the state of Delaware, in America, has recently restored the whipping-post. Denmark seems to be 'the only civilised community where the whipping of girls is a punishment admitted by the criminal law'; in that country 'whipping is used for girls up to the age of 12, and for boys up to the age of 15,' and 'flogging is resorted to for youths between the ages of 15 and 18 if they are medically certified as fit to endure it.' In Norway 'whipping is a very common form of punishment for children between 10 and 15 years of age.' In England, where, in 1893, 2858 children were sentenced to be whipped, there are many safeguards for the offender—a light rod when the child is under ten, a limited number of strokes (not more than six when the child is under 12, nor more than twelve when he is under 14), private punishment, with a witness, medical consultation, etc.; in Scotland, in 1893, there were 355 boys whipped, and in Ireland and the colonies the punishment is rare (in Victoria, during the seventeen years, 1873-1890, only 44 were so punished, and in New South Wales, in 1890, none). Morrison notes that while in England and Scotland, according to the evidence of magistrates, teachers, etc., before the Royal Commission on Reformatory and Industrial Schools, 'national opinion, so far as it finds expression, is on the whole in favour of retaining corporal correction as a means of dealing with juvenile offenders,' it must be admitted that 'in so far as the statute books are to be taken as an index of the deliberate judgments of civilised communities, the balance of international opinion is hostile to whipping.' And, being so hostile, it is also in consonance with the views of most primitive peoples.

Child Morals.—Children, at a very early age, 'are expansive,' according to Miss Lombroso (369, p. 84), 'more through need of excitement than through real sensibility, for the same reason that they riot, shout and jump in their play,' and their apparent insensibility is largely due to their inability

to feel loss, separation, death as pain. It has been said with no little truth that at this period of life, since play and excitement are the life of the child, 'he loves him alone who diverts him and appeals readily to his mind.' Remorse, even regarding the mother, 'is born not so much from consciousness of error committed, as from fear of the loss of the love, the useful and necessary benevolence of the parent; hence the child's pleasure and solicitude in overwhelming the mother with praise and caresses' (369, p. 88). The affectivity of childhood generally is much weaker than that of adults, and is essentially jealous—egoistic, and we may say in brief: 'The child tends not to love but to be loved and exclusively loved.' Cruelty, in children, perhaps, reduces itself 'to the fact of their impossibility to conceive the pain of others' (369, p. 98). Altogether, 'the morality of childhood is much more negative than positive,' but the inherited savage-like vanity, egoism, simulation, cruelty of childhood, instincts so universal and yet so dangerous, are, after all, adapted to prepare the child in some measure for social life, for 'if the child were pure, good, ingenuous, without egoism and without simulation, he would experience much greater fatigue and uncertainty in orienting himself and winning in the struggle for life' (369, p. 101). Nature, therefore, has been kind to him in having him born a little lower than those about him—the good angels of his environment.

'Morally,' Miss Lombroso tells us, 'the child differs perhaps less from us adults than he does mentally; the intelligence of the child passes through a series of evolutions, while his moral sentiments approach more nearly to ours, even from his first years' (369, p. 61). In fact, 'the same characteristic traits of us adults and civilised folk appear in the child, like a musical *motif* that can have infinite variations, but whose fundamental note is always the same.' In the morals of the man and of the child this fundamental note is 'self-protection, conservation of the ego, the desire of emerging, of procuring one's self the greatest number of advantages or pleasures possible, sparing at the same time as much as possible one's own energies.' Hence, 'misoneism' in the child, its protest against the disturbance of its equilibrium, against the destruction of its pre-established notions, against constraint to think, against expenditure of all sorts of mental energy beyond the necessary minimum. Since the child runs

over, in a few short years, the phases of the mental evolution of the race, there necessarily crops out in him much of the savage and of primitive man; many children, indeed, seem to have innate in them the passion for lying, dissimulation and vanity, which can only be compared with the craft and falsity attributed to many savage peoples. Appeals to honour and justice, which the child has no comprehension of, must fail with such, and experience seems the only teacher fitted to instruct them: 'We cannot make such a child cease doing a certain thing, stop telling lies, no longer want things for himself, because they are bad; it is better to make him see that his lie avails nothing and is soon found out, to make him understand by example, by taking from him when he is not willing to yield something to others, that he may feel as he makes others feel; by making him feel himself, when he is cruel, what physical pain is. This is one of the few means of educating the child; better than repressing with threats or fatidical sentences the manifestations of feelings which, being instinctive, will break out again in other forms' (369, p. 80). This spirit of calculation in the child, present unconsciously in even his instinctive acts, it may be his naïve judgment of advantage and disadvantage, can thus often be appealed to successfully when no other line of least resistance is apparent in all his mental make-up. 'Are there good and bad children?' asks Berenini, Italian deputy and lawyer, and his own answer runs (202, p. 401): 'No! There are individual, sanguine, choleric, mild, active, quiet, etc., temperaments. The leadership of moral behaviour, however, is lacking, for it is the evidence of a gradually developing factor not yet attained—social life. To the child, then, all things are possible, good and bad and the thousand and one intervening stages; only dispositions and tendencies are present and the results are whatever comes of the environment, or of education, which is merely the substitution of one *milieu* for another. The secret of preserving the good, the true office of education, lies 'not in sermons, harangues, idle talk, but in pure air, healthy food, good corporeal and mental exercise, the never-failing presence and example of moral customs and habits—the harmony of healthy social life.'

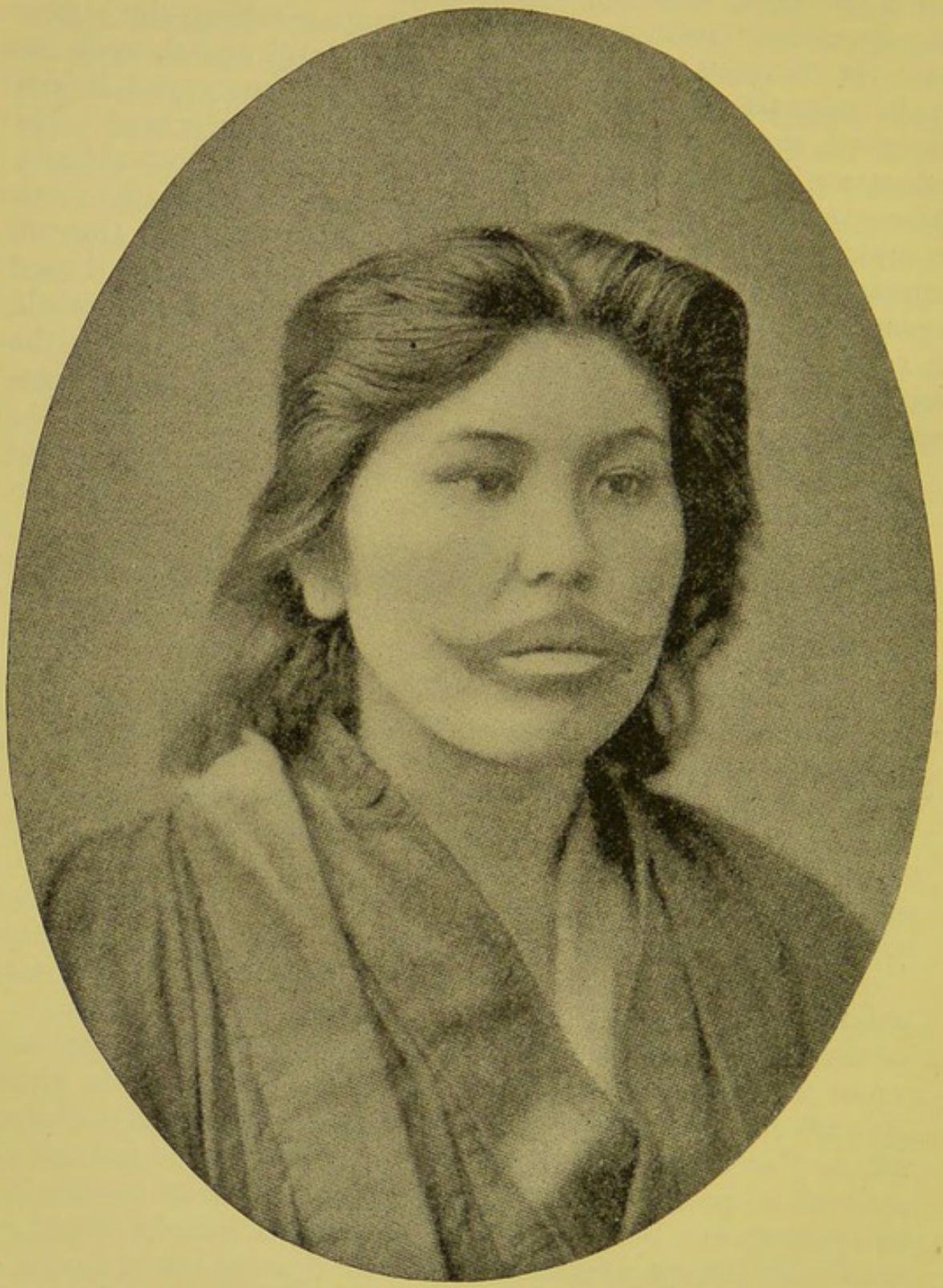
Education and Crime.—The relation of education and instruction to crime is thoroughly discussed by Ferriani, who cites the opinions of numerous authorities ancient and

modern. Himself believing that 'an ignorant honest man is worth a thousand educated rascals,' the author is not of those who see in education the eradicator of all crime. Victor Hugo was altogether too enthusiastic when he declared that 'every new schoolhouse closed a jail'; there is a good deal of truth in the saying of Seymour: 'Knowledge is power not virtue, it held to both good and bad.' The bad example of 'state, school, family, the protective trinity of childhood,' often undoes all that their honest, sometimes even unified, aims have sought to accomplish, and very frequently the ideal —for men and women must have some sort of ideal—of the criminal takes the place of the ideal of the father, the mother, the teacher, the statesman. And too often the educated classes are the worst offenders, judged by their conventionalities, 'white lies, opportunism, loose ideas of morals and justice, defiance of law, and neglect of necessary duties; love of money, weak consciences, hypocrisy are sometimes made doubly dangerous by needless education.' Ferriani holds that excessive education (companioned by fear, the instinct of defence, vanity, etc.) is a powerful factor in developing the germs of crime in children degenerately affected, and considers that, so far as education is concerned with the amelioration or the prevention of crime, the remedy lies in the increased usefulness of the elementary schools—the foundation stone of all. The universities and academies, turning out so many graduates that the use of their diplomas often means the sale of their consciences, may be let alone by criminological educational reformers (202, pp. 339-409).

Ciraoli, who has studied the criminal women of Naples, thus expresses his opinion of the various formative environments of the young: 'The most notable institution for moral discipline is the home, the second the school, the last the city, the teacher of practical life. If a woman finds herself in the last without having made a sufficiently lasting stay in the first, her moral education lacks its foundation, and the preparation in school is not enough to afford resistance against the charm with which city life has surrounded what the theologians call sin' (202, p. 345).

Safety lies in following out the idea of Cattaneo and beginning with separate elementary schools for the normal and the abnormal, the good being kept out of touch with the bad. But there must be harmony with the family and the

state, the home and the city; everywhere, as far as possible, the degenerate must be kept from contaminating the strong and the virtuous; and religion, ethical and moral, such as really appeals to children, the faith that trusts and is not deceived, must play its *rôle* alike at home and in school. No education is worth anything that is without a psychological basis. Moreover, it must be fully recognised that no education can completely change the real precocious criminal, and that all attempts at the education of minor criminals must be based upon the individual study of the criminal himself or herself. A *suum cuique* of education is as necessary here as with the most normal individuals who form part of any given community.



AINU GIRL.

(From *Rep. U.S. Nat. Mus.*, 1890.) This picture—the lip-tattoo aids in the illusion—illustrates the resemblances of the sexes so common among primitive peoples.

CHAPTER X

THE CHILD AND WOMAN

Sex Development.—The great biological distinction of the sexes, the development of which Geddes and Thomson have so admirably sketched, and the far-reaching results of which Havelock Ellis has so well summarised, is that woman produces the ovum and man fertilises it. Hence all the morphological peculiarities immediately connected with this difference are termed primarily sexual characters, although in the strictest sense only the sexual glands can be called primary, the external sexual organs being not the essential causative and determinative entities. Such other sexual peculiarities, as, to use the words of Havelock Ellis, 'by more highly differentiating the sexes, help to make them more attractive to each other, and so to promote the union of the sperm-cell with the ovum-cell' (183, p. 19), are styled secondary sexual characters. Kurella, however, taking the external sexual organs to be the real secondary characters, inclines to regard the characteristics just referred to (peculiarities of voice, hair, breasts, etc.) as tertiary sexual characteristics, while Ellis, who introduced the expression 'tertiary sexual characters,' prefers to apply the term to certain differences—such as the greater shallowness, proportionately, of the female skull, the greater size and activity of the thyroid gland in women, the smaller proportion of red blood corpuscles, the different relationship of the parts of the brain to each other—which are mostly matters of averages, and which, while not of great importance from the zoological point of view, are of considerable interest from the anthropological point of view, very often of interest from the pathological point of view, and occasionally of great interest from the social point of view (183, p. 20). In the earliest stages

of the development of the human being, 'both male and female glands and sexual passages occur together and equally complete in the same individual, and in the majority of cases factors unknown to us decide which of these glands (together with its passage) shall survive and develop, and which rapidly degenerate until scarcely recognisable vestigia are left' (341, p. 236). The process by which the sperm-gland or the ovum-gland succeeds in acquiring its chance to further development may very well, Kurella remarks, be looked upon as 'a struggle of the parts,' in the sense of Roux. At the time when this determination occurs, 'the external genitals (hitherto altogether of indifferent form, they have no double "Anlage"), receive an impulse to change into the female or the male type.'

In early childhood, as is well known, the sexes are essentially distinguished only by what Kurella calls primary and secondary sexual characters, but somewhat later appear 'indications of the tertiary characters, which must be really latent in children more or less, else how could a father, himself showing no sign of them himself, transmit to his daughters tertiary peculiarities of his own mother?' As to which of the two groups of tertiary sexual characters is now to develop, the germ-glands, 'which during the first 12-14 years of life remain without function, determine.' If before they have commenced to function they are removed or become atrophied, we have, in general, 'the development not of the tertiary characters of the original sex, but that of the latent rudiment of the tertiary characters of the other sex.' If, for instance, the removal of the testicles or a morbid shrivelling of them takes place in a boy, 'he gets a sort of female breast, becomes a gynæcomast; other female characters appear also, and sometimes the result is infantilism, sometimes feminism.' It is fair to assume, argues Kurella, that the normal testicles contain some chemical substance, the presence of which hinders the development of the tertiary sexual characters of the female group, so that it may be said that 'the development of the breasts, the fat of the hips and thighs, etc., is not the result of an impulse proceeding from the ripening ovaries, but the consequence of the fact that the latent rudiment of those structures are subject to no arrest on the part of the testicles.' *Vice versâ*, although to a less degree, all this applies to woman, 'in whom the development of the ovaries arrests the progress of the tertiary male

characters latently present.' Three times in the life of the individual, says Kurella, 'the germ-glands determine the most essential characters of the body. 1. After the first sexual differentiation—when the form of the secondary sexual characters, the external genital organs, is determined. 2. At the time of puberty—the form of the tertiary characters all over the organism is fixed. 3. After the climacteric and in old age (in man) involution of a sexual sort sets in. After the climacteric, *e.g.*, women often begin to grow a beard and take to politics, while in aging men analogous changes occur.'

D'Aguanno, in his anthropological and sociological study of woman, notes that the more recent studies in embryology have 'triumphantly disproved the opinion of those who contended that the female was derived from an arrest of development of the male embryo' (1, p. 451), it being now known that the embryo, at a certain stage of its existence, contains within itself the elements of both sexes; is in fact hermaphrodite, becoming male or female by the atrophy of one sexual character and the continued development of the other. It would, in reality, be just as true to state that the male arose from an arrested development of the female embryo as *vice versâ*.

Talbot, who considers that 'the female type, from the standpoint of bodily and nervous development, most nearly approximates the promise of the child type' (625, p. 273), holds that the forms of degeneracy known as infantilism, masculinism and feminism are 'practically arrests of development of the promise of the child type.' In infantilism the body (the face especially) or the nervous system (or both), or some particular organ or characteristic, is checked or arrested while the rest of the organism develops regularly and fully. Thus some people are in many respects physically children, and look young throughout, like the *gamin* of Paris described by Brouardel (143, p. 173). Masculinism originates when 'the female has proceeded so far in development as to have female organs and their functions while retaining traces of a predominant character of the lower male type,' and feminism when 'the male has proceeded along the line of evolution toward the female type, but ere sex has been fixed, further development has been checked and the male type is finally assumed as the predominant one.' As arrests of development may occur at any point in the evolution of the indifferent type

from which both sexes originate all sorts of combinations are possible, and not infrequently 'the nervous system takes one sexual ply, while the body takes another,' and we have, as it were, a male soul in a female body, or *vice versâ;* often the male possesses only a single marked female characteristic, or the female only one very notable male characteristic. Interesting discussions of some of the points involved are to be found in Meige, Ammon, and the numerous works on sexual pathology.

Ammon, basing his conclusions upon the examination of some 23,000 conscripts, and the periodical measurement of several hundred individuals, observes, with reference to the nature and prevalence of infantilism and feminism: 1. The infantile individuals found among conscripts aged 19-22 years are not all anomalies, the majority being the extremes of a long series of retarded individuals, who, in the course of time, will develop. 2. This transitory form of infantilism is principally found in individuals of small stature and smooth body. 3. Permanent infantilism is very rare among the conscripts, and occurs in individuals of all statures from the shortest to the tallest. 4. Feminism, manifesting itself by the development of lactic glands, is not rare in boys, but usually appears in a transitory form. It begins about the time of the development of puberty, and after having become more or less strikingly advanced, regression take place, with ultimate complete disappearance. 5. It is erroneous to consider feminism and permanent infantilism correlated. 6. When the growth of the lactic glands in youth does not suffer early arrest, these develop markedly, causing the breasts to resemble those of girls of fifteen, and no regression seems to occur. 6. The excessive development of these glands has no influence upon the development of the genital organs or upon that of the secondary sexual characters which evolve in quite the normal fashion. These extraordinary cases may have suggested to the Greek artists the idea of hermaphroditism.

Hyperthelia (the presence of supernumerary nipples in males) has been exhaustively studied by Dr Karl von Bardeleben, upon whose suggestion examinations by physicians of the army were made of some 100,000 young men (mostly about twenty-one years of age) in connection with the recruitment for 1893. The total average for all the provinces of Prussia of individuals possessing supernumerary teats is 8.94 out of

95,749 persons investigated, the percentages ranging in diverse localities from 0.5 in Dortmund to 31.5 in Lauban (Lower Silesia), differences so great that only the observer's faith in their own eyes could justify them in recording. The occurrence of high percentages in West Prussia, Posen, the parts of Silesia adjacent to Bohemia, Mecklenburg, etc., where the physically not yet Germanised Slavonic element is still to be found, leads the author to see in hyperthelia a valuable anthropological characteristic, serving to distinguish the Germanic from the Slavonic population in Prussia. Of the individuals possessing supernumerary nipples, 38 per cent. had them on the right side, 43 per cent. on the left, and 19 per cent. on both sides of the body. As to position, with respect to the normal nipple, the supernumerary ones were, seemingly, more frequent below than above it. Most of them lay in a line drawn from the shoulder or axilla to the genital region, the lines on each side of the body crossing each other between the navel and the genitals, very few (except in Wiesbaden) occurring below the navel. The supernumerary nipple will usually be found about 8 cm. below the normal one, according to the author's summary, and somewhat oftener on the left side of the body than on the right. It is an interesting fact that with the increased proportion of individuals possessing supernumerary nipples goes an increase in the number of supernumerary nipples observed in the individual; thus in Mecklenburg, where the percentage is as high as 30 per cent. as many as 6 have been noted.

A most interesting case of congenital hyperthelia has been reported by Herr von Brunn; twins (brothers), each had a supernumerary nipple on each side of the body below the normal ones. Henke correlates with the rudimentary nipples, the similar phenomena, wads of skin, little elevations of the skin, vascular knots, etc., which are very common, *e.g.*, on the dorsal surface of the first metacarpal space. Kükenthal, who has investigated the embryonal development of Cetaceæ, has noted in an embryo of the *Phocæna communis* no fewer than eight primitive nipples (the adult animal has only two), and four in embryos of *Monodon monoceros* and *Globiocephalus melas*. The conclusion arrived at is that the ancestors of these species possessed more nipples than the adult members of the species do now, and some of these are reproduced in the embryo and young.

Dr L. Laloy[1] thinks it probable that 'the reduction in the number of nipples stands in relation with the diminution of the number of young born at one time,' and suggests that polymastic women may give birth more frequently than others to twins. With Klaatsch he attributes the persistence of the pectoral pair of nipples alone in the primates and some other animals to tree-climbing, and the assumption of the vertical posture—such a position rendering easier and more comfortable the transportation and suckling of the young. This atavistic peculiarity can be inherited—the statistics of Leichtenstein show 7.6 per cent of heredity—and of 107 cases 99 occurred on the thorax, 5 under the arm-pits, 2 on the back, and 1 each on the shoulder and the outside of the thigh.

Sexual Perversions.—'Psycho-Sexual Degenerations' have been discussed at length by many recent writers—Moll, Krafft-Ebing, etc. Silvio Venturi, in a large volume of general summaries and original observations, deals with these phenomena from a somewhat peculiar point of view. For him onanism is a sort of play preluding love. To cite his own words, 'the onanism of early adolescence is the embryo of what love will be later, a pleasure of body and mind.' In onanism the boy falls in love with himself, and his use of the sexual organ is a training-school for the future—'the youth enters upon love of woman in like manner as the adolescent initiated onanism.' Love is the altruism, onanism the egoism of sexual instincts, according to Venturi.

The opposite pole from onanism in the young is pimping in the old. Ferriani, in his study of 'Cunning and Lucky Criminals,' and Viazzi, in his work on sexual criminals, have recently emphasised the fact of the exercise of pimping by women, *par excellence*, not alone for the sake of emolument and lucre, or through morbid affection, material interest, vengeance, fatuity (examples of which abound in all ages—Greek nurses, Martha in *Faust*, the Countess of Candat in Bourget's *Cœur de Femme*, Nicia in Machiavelli's *Mandragola*, etc.), but as an art, for art's sake. The large class of old women who in all countries are given to the exercise of disinterested pimping are, according to Viazzi, pursuing the art for the love of it, simply because they are visuals, in whom has taken place the substitution of an indirect for a direct representation of the sexual act, its preliminaries and its

[1] *L'Anthropologie*, 1892, p. 189.

consequences; in other words, woman, more easily than man (who, as many facts show, enjoys the sexual embrace more, and is more sensible of the enjoyments of physical love) is able to separate the idea and the image from the action, and, as disinterested pimper, reaches, so to speak, 'a social equivalent of physiological love' (664, p. 20).

Phylogeny of Sexual Aberrations.—The phylogenetic and ontogenetic relations of sexual perversions have been studied from the point of view of an adherent of the Lombrosan school by Penta, whose 'firm belief in a criminal type, the born criminal, atavism, moral insanity as a disease *per se*, etc.,' causes him at times to exaggerate and dogmatise, but many of whose observations are keen and suggestive. Penta, perhaps justly (and Näcke seems to agree with him on this point), holds that the history of the various sexual aberrations shows that our times are not at all worse than the early centuries of human civilisation, and notes the fact that most perversions have been at some time or other sanctified by religious sects. Since phylogenetically and ontogenetically human sexual intercourse is only 'an enlargement and extension of the union of the zoosperm and the ovulum, representing again the conjugation of many infusoria and protozoa,' and sexual pleasure has been developed from the pleasure of the sense of touch, even in the lowest forms of life devices have been provided for increasing and intensifying this pleasure, and for providing, in the higher forms of life, mutual means of attraction (song, ornament, etc.). Man is no exception to the rule. Penta points out many correspondences: Among primitive peoples the men are sometimes more ornamented and painted than the women; the preference of civilised women even yet for the brave man or the soldier, the existence of marriage by capture among certain savage peoples, the frequent yielding of woman to a second suitor, the wrestling or fighting for a wife that still survives among the ignorant classes in some civilised communities; all these are parallel to the struggles of animals in rut, and the actions of females at that time; in man, also, there still can be detected the element of cruelty and roughness that goes with the mating of some of the animals; at the time of puberty lawlessness and immorality increase, while with the waking of love in spring crimes of violence increase, and murder and crimes against morals increase with summer; the temporary unions

of the animals find many analogues in the brief unions among some primitive peoples, and with early man, perhaps, as with the brutes, the female was his property, won and held by him against all others. The author remarks, further, that 'by reason of the struggle for existence heat could appear in animals only periodically, and during the short period of its existence the sexual pleasure was so violent as to keep with it traits of cruelty; but in man, whose food-relations kept on improving, the sexual pleasure began to lose in violence, cruelty subsided, and sexual selection, together with civilisation, gave to customs connected with sexual intercourse an increasingly milder form.' Penta believes that sexual aberrations are mostly atavistic, 'a relapse into animal times, that allows the simple and older characters to appear'; amid all the heritage of culture and civilisation the original, animal nature sometimes crops out. The early appearance of the sexual impulse is itself atavistic, since, as Spencer has pointed out, the higher the species, the later the period of its appearance.

Sexual Inversion and Auto-Erotism.—In a recent account of 'Sexual Inversion in Women,' Mr Havelock Ellis comes to the following conclusions, based upon a wide acquaintance with the literature of the subject and personal investigations:— 1. A slight degree of homosexuality is commoner in women than in men, but well-marked and fully developed cases are rarer. 2. It shows itself with the evolution of puberty, and may be of peripheral or of central origin. 3. The rudimentary kind of homosexuality is more common among girls than among boys. 4. Homosexuality seems to be on the increase among women. 5. It is very frequent among prostitutes (185).

In another very suggestive study of 'Auto-Erotism' (186), Mr Ellis discusses in detail 'the phenomena of spontaneous sexual emotion generated in the absence of an external stimulus proceeding, directly or indirectly, from another person.' These phenomena 'range from occasional voluptuous day-dreams, in which the subject is entirely passive, to the perpetual unashamed efforts at sexual self-manipulation witnessed among the insane,' the typical form of auto-erotism, however, being the occurrence of the sexual orgasm during sleep. Masturbation, one of the forms of auto-erotism, is common with many of the lower animals, and among many of the lower races of men practically universal with both sexes.

Day-dreaming and solitary reveries, again, induce a sort of

'psychic onanism,' which is 'largely cultivated by refined and imaginative young men and women, who lead a chaste life and would often be repelled by masturbation.' In these cases the phenomena are largely normal, as is also the occurrence of the sexual orgasm and loss of semen in healthy individuals during sleep, although much of recent medico-scientific writing, as Ellis remarks, shows a tendency to see more of the abnormal in these phenomena. Masturbation seems really to have no age limit, and is probably more common in women than in men after adolescence; at puberty and adolescence, occasional or frequent masturbation is very common in both sexes, but the *rôle* of the alluring and restraining factors of tradition, ignorance, imitation, etc., has not yet been sufficiently investigated to enable us to determine with exactness the relative sex-frequency. To these opinions Ellis adds further that the frequency of masturbation in the pubertal period and during adolescence is probably less than is commonly believed, while the results of the saner studies of the last quarter of a century have cleared away much of the exaggeration of the writers who followed in the wake of Tissot, whose treatise on 'onanism' appeared in 1760, and have created an interminable list of 'supposed symptoms and results of masturbation,' almost all the ills of human flesh and spirit being credited to this vice. The psychiatrists, however, recognise still in masturbation a fertile cause of psychic anomalies, rather more, perhaps, than the facts warrant. As a 'natural result of unnatural circumstances,' masturbation, when not carried to excess, does less good, and perhaps not more harm, than 'sexual intercourse practised with the same frequency in the same conditions of general health and age and circumstances,' to cite the opinion of Sir James Paget, as improved by Ellis. The 'nasty practice,' however, ought to be exceedingly rare in normal individuals enjoying healthy physical and mental life and right social *milieu*; while, as regards auto-erotic phenomena, in the widest sense, 'we are concerned, not with a form of insanity, not even necessarily with a form of depravity, but with the inevitable by-play of that mighty instinct on which the animal creation rests.'

It may be that Mr Ellis takes too lenient a view of some of the phenomena of auto-erotism, but he is much more to be trusted than some of the 'nightmare' writers in Germany and in English-speaking countries. Some authorities, indeed, go further than Ellis in the revolt against the

Tissot school. Thus McClanahan[1] thinks that 'the history of masturbation is identical with the history of the race,' and holds that its effects have been very greatly exaggerated, that, in fact, 'almost all males have masturbated without seriously endangering their health.'

There is also noticeable a tendency to trace the origin of psycho-sexual and psychopathic phenomena almost wholly to the conditions of early life. According to Dr J. H. Schmuckler of Kiew, onanism is more a product of the home than of the school. The warm bed of the suckling, the irritation of the genital region due to uncleanliness, and later, creeping about, crawling on the floor; the nature of clothing, the use of alcoholic drinks, spiced foods, etc., dancing, riding, presence at erotic scenes and conversations, diseases of the skin, or of the genital organs, imitation, all these exert a powerful influence quite independent of school-attendance and school-life.[2]

Dr Pasquale Penta, in discussing the case of a sexual invert, a man-servant (the domestic profession, as Tardieu and Legludic have noted, seems to favour the development of pederasty, etc.), whose child-life was made miserable by the violence of his father, points out how often 'sexual inversion is the effect of *milieu* and education rather than of any original abnormal sexual tendency.' A boy or youth of timid and yielding disposition, with the natural effect of a robust constitution destroyed by the domination of a tyrannical parent, enters upon the submissive career of a domestic, and falls a victim easily to the suggestion of a stronger mind, his own soul having been atrophied and its original germs of virility relegated to the sphere of the unconscious. Alcoholic heredity, paternal brutality, maternal weakness and passivity, go far towards accounting for the first appearance of homo-sexual tendencies, and the disappearance of the normal heterosexual phenomena.

Luzenberger[3] emphasises the disposition to sexual psycho-pathy resulting from forced attempts at coïtus during child-hood, and from association with sexual pains suffered in the early years of life. That with individuals at all predisposed to degeneracy these factors exert a very powerful *rôle* is evident

[1] *N. Y. Med. Journ.*, Oct. 9, 1897.
[2] *Arch. f. Kinderhlkde.*, 1898.
[3] *Neurol. Cbl.*, 1897.

from the statistics of criminology. The sexual precocity of criminals and many degenerates is well known, although the lack of absolute certainty as to the corresponding figures in the case of normal individuals weakens the case against the abnormal. Taken altogether, it may be said that sexual abnormality, like sexual precocity, is, in man especially, a characteristic that detracts from his rounded perfection. As Dr Marro well says: 'The precocity of enjoyment of sexual pleasures deprives man of one of the most powerful factors of his civil character—the feeling of conquering the heart of woman with the full development and perfection of his physical and moral qualities—a feeling which serves to enkindle youth and forms the most powerful spring to guide man on the road of work and of duty' (404, p. 300).

Here, if ever, the precept holds, 'being a child must not hinder becoming a man; becoming a man must not hinder being a child.'

Development of the Sexual Instinct.—In his book on the psychology of the sexual instinct (552), Dr Joanny Roux, of the Lunatic Asylum at Lyons, has discussed in brief terms the evolution of love, the history of which is a tale of increasing durability with increase in complexity of the composing elements. All manifestations of the sexual instinct originate in a causal peripheral stimulus, which, after nervous action, is consciously perceived and subjected to co-operative influences on the part of the various senses, becoming more and more complex as the simpler nervous sub-stratum is left farther behind, then crystallising and systematising itself by aid of all the arts and devices of mankind for the complete utilising of the feelings and instincts of the race and of the individual—association, admiration, affection, love of approbation, flattery, pleasure of conquest and desire of power, modesty, curiosity, honour, fidelity, etc. Roux rejects the opinion (shared by Krafft-Ebing, Beaunis, Delbœuf, Tarchanoff and others) that the sexual instinct has its sole basis in the need of functioning of the genital organs, that the *primum movens* of the sexual need is the repletion of the seminal vesicles.

The sexual *appetite* is simply the demand of an organ to function, and is satisfied with sexual connection; sexual *hunger* (the need which the young girl feels throughout her entire organism, yet is able neither to localise nor to comprehend) is 'satisfied only in the union of two beings chosen by

virtue of mysterious affinities.' The sexual appetite arouses desire only; from sexual hunger springs love. Hence it is that 'we love with all our body.'

In the phylogenetic history of man's development, according to Roux, the olfactive sensations, the earliest to be differentiated from the general sensibility (a stage of evolution still present in the reptiles and amphibia), were naturally the first to be associated with the sexual need. In man visual sensations have dethroned the olfactive in their association with the sexual need, as art abundantly proves. Less important than sensations of sight in relation to sexual need are auditory sensations (in certain insects and birds they exert the first *rôle*), which, however, as the correlations of music and sexual erethism in man demonstrate, are very powerful. The gustative sensations (in the normal man nearly *nil*) are so closely bound up with tactile sensations, that with the kiss on the lips it is difficult to separate gustation from the general and particular contact of bodies and organs. In a certain sense love is the sacrifice of the individual to the species, and 'chastity the revenge of the individual upon the species,' the multifarious associations of both making them what they are and have been. The alliance of hate and love represents the revolt of the individual, the royalty of woman, the spirit of the race; modesty and shame the favouring of intellectual at the expense of physical selection; marriage the recognition of the right of the offspring to parental care until they have reached the adult state.

Very rarely, Miss Lombroso holds (369, p. 102), are young children susceptible of real love; they are too egotistic and wrapped up in themselves, although their passion and grief do sometimes show forth a potentiality of love, very latent, however, in many cases. Precocious loves in early childhood are 'a sort of hyperæsthesia of affectivity, anomalous if not pathological.' Of such sort are De Goncourt's 'Chérie'; Renan with his 'Noémi'; Tolstoi with his 'Sonia'; Marie Baskirtseff with her 'Duke H.'; Rousseau with the girls 'Vulson' and 'Goton'; Berlioz with 'Miss Stella Gautier.' Miss Lombroso, however, is too sweeping in her conclusions, and the development of the feeling of love is, no doubt, more common in young children than she is willing to concede, seeing, as she does, 'a providential law' in the fact that 'all children who present an exaggerated affectivity are anomalous or die early' (369, p. 113).

Sexual Precocity.—Dr J. L. Morse, in a recent brief review of

the literature of 'Precocious Maturity' in little girls, comes to the following conclusions (based upon the accounts given of some fifty cases): 1. Precocious maturity is a physiological congenital anomaly of development, and is not causally connected with rickets, hydrocephalus, lipomatosis, etc. 2. Menstruation (most often appearing, accompanied by ovulation, in the first two years) is never the first symptom, but is always preceded and accompanied by others. 3. The attributes of maturity are not all acquired before the age of seven or eight years. 4. Menstruation may continue as long as when it begins at the normal time. 5. Sexual desire is soon developed, and pregnancy may occur early. 6. The mental development of such children is as a rule not as rapid as the physical and sexual, though some do show the mental characteristics and tastes of far older children, or even of adults. 7. Some signs of the condition (more than average weight, large breasts, advanced state of genital organs, hair on vulva, or menstruation) were always manifest at birth. 8. The increase in height and weight (above the normal average in all cases observed) was rapid. 9. The other pubertal characteristics observed varied in the order of their appearance and in their relative development, and sometimes preceded, sometimes followed, the first menstruation. Many further details as to precocious maturity are given by Ploss, who cites forty-two cases, from all over the world, of physical and sexual maturity, menstruation, coïtus, pregnancy, child-bearing, etc., during childhood (498, I. p. 244).

The mammary glands have been known to function even in infancy. Such a case is reported by Dr J. B. Grover, of Peckville, Pa.[1] The subject is a robust child (born Jan. 28, 1898) 'having the general appearance of children of her age,' and the secretion of milk (microscopically identical with mother's milk) is 'so abundant that the mother is obliged to pump the milk out at least once daily,' the child being fretful until this is done. The secretion began to appear when the child was one week old.

Among the factors which make for sexual precocity Dencker notes (161): The social environment of modern city life (Rousseau's saying: 'Cities are the grave of man' applies here also), with its excitements and vices, its degeneration-phenomena, its nervous tension and its 'hurry to live,' mentally and physically; the increase in the variety of foods and drinks (tea, coffee, wines and liquors, spices and condiments innu-

[1] *Med. Rec.*, N.Y., July 23, 1898.

merable, gastronomic titillation *par excellence*) ; the family life of parents and the physical and mental education of the child in the early years of life (noises and unusual acts, artificial disturbances of nerves, pampering and weakening by indulgences, parents' awkward and unsatisfactory answers to childish interrogatories) ; school-life and associations (well termed by physicians 'the fearful years') with their restraint and torture of body and mind, unnatural forcing of attention and interest, seeming decrease in the child's natural intelligence (with here and there a forced growth in mind or body), and their only compensations to the child dangerous dreams of the fancy and plays of the imagination ; that whereon the child is allowed to feed his soul—careless conversation of parents, elders or servants, bridleless talk of older companions, impure and suggestive jokes, stories and pictures, certain Bible verses, newspaper items—all these constituting a mass of suggestions that, together with the physical condition of the child, hasten the outburst of sexual life. A vast amount of evidence as to the sexual life of the country folk of Germany, and the causes of youthful corruption and depravity, is to be found in the published results of the investigations of pastors Wittenberg and Hückstadt, whose pages are a sad record of that parental neglect which is the first great cause of child-crime (688).

Woman's precocity of development is recorded of old-time. Dencker, with some venturesomeness, arranges the parallelism of development in the human male and female as follows (161, p. 27) :—

	Parallel Years of Life.								
Man . .	1-3	5	6	7	9	10	11	12	13
Woman .	1-3	4	5	6	7	8	9	10	11
Man . .	14	15	17	18	20	22	24	26	27
Woman .	12	13	14	15	16	17	18	19	20-21
Man .	28	30	32	34	36	38	40	41	42
Woman .	22	23	24	25	26	27	28-30	31	32
Man . .	43	44	45	46	48	50	52	54	56
Woman .	33	34	35	36	37	38	39	40	41
Man . .	58	60	61	62	63	64	65	66	67
Woman .	42	43	44	45-47	48	49	50-65	66	67
Man . .	68	69	70	71	72				
Woman .	68	69	70	71	72				

From this it appears that during the first three (or four) years of life, the period of early childhood, no marked differences of development between male and female occur. After that, however, a precocious development in girls occurs, giving them a lead over the boys, which increases from the 2-4 years at the attainment of puberty to about 10 at middle age, and even 15 later on in life—a levelling up, however, becoming very noticeable at 60, while at about 72 the sexes are together again. Corresponding to the undifferentiated period of early childhood, we have the undifferentiated (comparatively, at least) period of old age—the period 'de retour' in more senses than one. These phenomena are explained by the two biological laws of rapidity and slowness of development. The reversion is equally rapid with the evolution; the slower the evolution has proceeded, the longer the period of culmination.

The parallelism of the various periods of life Dencker considers to be:—

Periods.	In Man—Years.	In Woman—Years.
First Childhood	1-7	1-6
Boyhood and Girlhood	7-15	6-13
Pubertal Development	15-20	13-15
Prime	20-32	15-24
Middle Age	32-45	24-35
Epoch of Involution	45-62	35-44
Extinction of Reproductive Power	60-62	43-45
Extinction of Sexual Impulse	62-75	45-48
Old Age	65	65

Dencker, it will be seen, makes 'middle age' in man begin where, as we saw previously, his real 'infancy' has hardly ended.

Puberty.—The pubertal epoch, in both sexes, is naturally a time of very great stress, and innumerable physical and psychical perturbations and abnormities find there a rich soil for development. The opinion of Marro that the period of greatest growth is also the period of minimum power to resist disease and sickness, shared also by Combe, of Lausanne, is opposed by Key, Hertel, Hartwell, and other more recent authorities in America, as detailed in Burke's comprehensive

article on 'The Growth of Children in Height and Weight' (91, p. 290). Much of the divergence of opinions, however, may be traced to inexactness in the delimitation of the pubertal periods and lack of agreement in the citation of diseases, etc.

The existence of a special puberty-psychosis is denied by Wille, whose conclusion is based upon the study of 135 adolescents (girls 65, boys 70), among whom he has met with all the common forms of mental disease (76 cases being simply mental affections, while 59 cases were accompanied by organic lesions). The most frequently occurring troubles were mania (29 cases) and melancholia (21 cases), paranoia (4 cases), being very rare, furnishing indeed but one really typical case—a youth of 20 years. It would seem, however, that while there is no special psychosis of puberty, the process of pubertal development does give to the psychoses occurring during that period a special impress, or modify them in particular fashion (683).

Dr Marro recognises three pubertal stages in the development of the human being, viz., (*a*) preparatory stage; (*b*) stage of accelerated development; (*c*) stage of completion. The first stage is characterised, seemingly, by an arrest of growth in stature, nature seeking, as it were, to gather strength for the next period. It is marked also by the first signs of the greater development of the internal and external genital organs, and the first appearance of the pubic hairs; by a certain improvement in the higher psychic attributes (attention, reflexion, judgment, etc.), and by an improvement likewise in social conduct as compared with previous years. The second and more critical period is one of more rapid growth in stature, vital capacity, etc., and by marked evolution of the physical sexual characters, and the great growth in stature and weight seems to be accompanied by an arrest of functional development and organic structure, so that a temporary weakness and lowering of the power of resistance takes place in the physical and moral faculties of the adolescent. This period stands next to first childhood in its minimum power of resistance, revealing itself also in instability and impropriety of character. The period of greatest growth is thus the period of great physical weakness and inability to resist disease for both sexes. During this period, however, the foundations of later individuality and psychic differentiation and consistency which mature in the

third period begin to be laid. In this third period occurs the greatest assimilation of materials and the inauguration of the process of elaboration, and the evolution of individual differences, and the face reflects the character-transformation that is going on. A new being has, in fact, arisen, or is arising, and whatever of genius is hereafter to be revealed in all its fulness lets flash a spark here and there. Now woman shows what Venturi calls her two undoubted traits of genius—her somatic beauty and her gift of seduction. Her whole being is illuminated, her eyes speak and all her motions are eloquence. She feels and exercises her right to attention, admiration, love. Her soul now receives the repose of her sex after the disturbance of the first menstrual flow. The young man too is flooded with innovations physical and psychical. The agitation of earlier years settles into calm, thoughtlessness changes to action. He feels his strength and prepares to go forth to conquer and to love. The regularity that betokens fecund activity makes its appearance and the highest intelligence dawns in the mind.

The peculiar change that often takes place in the individual after the establishment of puberty has been noted by many writers, ancient and modern, and figures in the proverbs and folk-wit of all lands. 'It is a fact of daily observation,' says Dr Marro, 'that boys who manifest the most ungovernable temper and pass through a period of maximum restlessness so that they seem to promise nothing good at all, showing, instead, all the characteristics of moral insanity, change their character, as if by magic, as soon as the pubertal epoch is over, and take on firmness, aptitude and propensity to work.'

The 'dawn of intelligence' is a very ancient figure of speech, both in the Old World and in the New. Miss Alice C. Fletcher, writing of the Omaha Indians, with whom and with whose language she has had a long and intimate acquaintance, says (211, p. 333):—

'"Wa-zhi^{n}-ska" is the word which designates the time when a youth, having passed the period of childhood, has reached the stage when he can enter upon a season of fasting and prayer in order to secure a vision. The mind of the child is said to be dark; he is like one in the night, unable to distinguish objects; as he grows older, light begins to dawn, and when he can distinctly remember and can place in order the sequence of events of which he has been cognisant, then his mind is said

to be becoming "white," and he is approaching the suitable mental condition to enter upon the rite which may bring him into personal relations with Waka^{n}'-da, as manifested in concrete form through the medium of the vision. The use of the word wa-zhi^{n}-ska to indicate this period in the life of a man is significant in view of the meaning of the word itself and of the importance to the man of the rite he is about to practise.'

In Arabic 'maidenhood' and 'the beginning of morning' are often poetically expressed by the same word. According to Drs Barbaud and Lefèvre, in their study of puberty in woman, with the first menstruation, what was before the sketch becomes 'a little woman.' She who fell asleep a child wakes up a woman. The modest chrysalis of yesterday has changed into the brilliant butterfly of to-day.

The 'making of men' and the 'making of women,' the ceremonies of adolescence and puberty among primitive peoples, concerning which many details are given in Ploss's encyclopædic volumes on Woman and the Child, and in the extensive periodical literature of the subject, have recently again attracted the attention of the psychologists and philosophers.

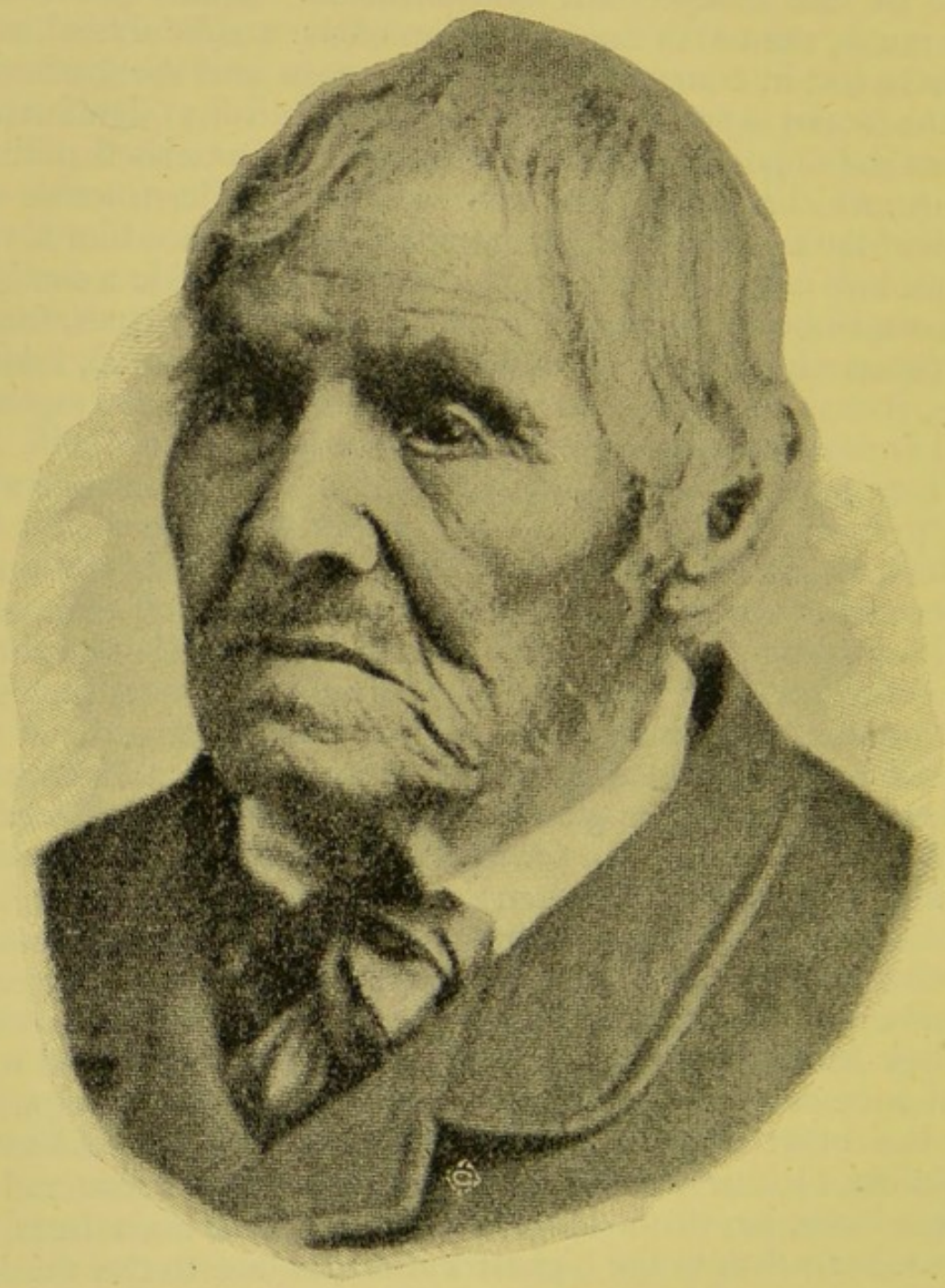
Dr A. H. Daniels, in his discussion of 'Regeneration,' shows how remarkably primitive peoples and religious societies of all times and races have, in their ceremonies, initiatory rites, etc., recognised the 'decided awakening of the intellectual life, and the 'decided change in the moral life' towards altruism and social sexuality which take place at puberty—adolescence, the period of 'new life' by nature, being also the time for the 'new life' of the spirit. President Hall, in his discussion of 'Initiations into Adolescence,' has also emphasised the importance of puberty-lore for child-study, while numerous lesser writers have followed in the footsteps of Dr W. H. Burnham's earlier article on 'The Study of Adolescence,' a psychological interpretation of the truth contained in Rousseau's epigram, 'we are born twice—once to exist and again to live; once as to species and again with regard to sex' (96, p. 174).

Dr Antonio Marro, whose volume on 'Puberty in Man and Woman, studied from the point of view of Anthropology, Psychiatry, Pedagogy and Sociology' contains a mine of scientific facts and information on all aspects of the subject, has more recently published a brief article on 'The Pubertal Epoch in Folk-Use and Folk-Custom,' in which are summarised

some of the most noteworthy folk-usages in connection with the transition of the human being from a life which, especially with civilised peoples, is more or less parasitic, to one that is more or less independent and altruistic. Marro points out how much, even with the institution of the public school, etc., we have lost in comparison with the savage and the barbarian in the social appreciation of puberty and its significance. About the only relic of the old initiation ceremonies is military service, which, in many countries, takes the male, towards the close of the transition to mature youth, and teaches him a very special and not very useful art, and on the moral side a similarly equivocal obedience to authority; all the civic virtues, family life (upon which the State depends) even, are ignored, injured even, fitness to march and to fight being the one end and aim held in view all too often. The initiation into civil life has not kept pace with the growth of culture. We retain somewhat the primitive recognition of the puberty of the body, but neglect, as primitive peoples did not, the puberty of the mind, of the soul. And, with us, girls are much worse off than boys.

Woman and the Child.—'Women and Children'—the phrase ran glibly from the tongues of the ancients, as it continues to do from the tongues and pens of many moderns, with no real consciousness of the deep significance of such a linking together. Peasant's jest, gibe of soldier, sarcasm of philosopher, bachelor's witticism, have for ages taught the world to believe that women are like children in being weak and 'not-man.' Mr Crawley's detailed account of 'Sexual Taboo' informs us in what manner men have written down women as 'weaker vessels,' socially, politically, religiously, extending the dictum of their inferiority even to the next world at times, and more than once denying them the possession of a human soul, while, on the other hand, Professor Mason's *Woman's Share in Primitive Culture* reveals to us how much of the material art and science, by virtue of which the race has risen from the lowest barbarism to the highest culture, is due to the thinking brain and the labouring hand of woman. Indeed, in his multiform recapitulation to-day, the child is what he is by reason of the past represented by his mother, the first poet and the first priest, the first food-bringer, weaver, skin-dresser, potter, beast of burden, jack-at-all-trades, artist, linguist, founder of society and patron of religion, for in many, if not in all these forms of human activity, man has simply followed the elder

woman. There is ample justification, therefore, for the panegyric of Reclus upon woman, to whom 'mankind owes all that has made us men,' and who was 'the creator of the



THE LATE CHIEF 'VANISHING SMOKE,' OF THE MOHAWKS OF THE GRAND RIVER, ONTARIO, CANADA.

(From *Rep. Prov. Archæol. Mus., Ontario*, 1898.) The face illustrates the resemblance of the sexes in old age.

primordial elements of civilisation' (529, p. 51). Woman, who covered her unborn child with her own body, was the first architect; woman, who spared her own offspring, 'the mother

of the pastoral art'; woman, who ripened the fruit within her own womb, the first agriculturist. Not merely, then, as being weak, does woman resemble the child, but as being in very truth the *fons et origo* of humanity. The pride of the male in ages of militarism and masculine authority, forgetting the times of matriarchy and the political genius of woman, still easily discernible, has obscured the original nearness of man and woman, exaggerated the differences between the sexes, many of them the result of social circumstances and adaptations, and shut its eye to the inevitable *rapprochement* which was bound to set in when the victory of peace and industrialism over war and military conquest began to assert itself.

The difference between the sexes (in some of the lower classes of animals the distinctions are practically *nil* or the female is more favoured, as among the termites, cochineal-insect, etc., and many fishes, etc.) increases with the rise in the scale and progress of animal development (the superiority of the male becoming more marked from the birds up), reaches its acme in man and seems with him to increase with civilisation and culture. Some of the exceptions and limitations to this theory are well discussed in Havelock Ellis's *Man and Woman*, from which we learn that woman, because she represents the race-type of the future humanity better than man, is already shaping man in her image; physically, mentally, even socially and industrially woman has been leading man on, and feminisation, in the proper sense of that term, is one of the marked tendencies of our modern complex civilisation. The smaller and smaller *rôle* of militarism (the effect of which, in all ages, has been to divert man from the womanly type), and the increasing industrialism of modern civilisation ('the industries belonged primitively to women and they tend to make men like women'), together with the innumerable facilities for nutrition and the increasing conveniences of locomotion and human activities in general, all tend towards an approximation of man and woman, which represents the highest effort of the race to make the best of life in all its varieties and vicissitudes. If nature made little difference, in many respects, between the savage man and woman in their circumscribed *milieu*, she is assuredly drawing them together again, after centuries of artificial and accidental divergence, in the new, illimitable environment of modern culture.

Chief Sexual Differences.—The sexual differences, physical, physiological and psychical, have been studied by many investigators from Ackerman in 1783 and Burdach in 1826-1840, down to the present time; the best general summary is to be found in Havelock Ellis's *Man and Woman.* The following list, compiled from numerous authorities, contains some of the chief differences observed.

In this list the characteristics marked * are those, among others, which woman seems to possess more or less in common with the child, and which have made possible the theory of the resemblance physically, physiologically and psychically of the child-type and the female type now held by many excellent authorities.

Characteristic.	In Woman as Compared with Man.
I.	
*Abdomen	Size relatively greater
Anus	Situated farther back
*Apophyses	Less prominent
*Arches (supraciliary)	Less developed
*Arms	Shorter
*Articulations	Less in volume
*Base of skull	Usually smaller
*Beard	Absent
Bladder	Relatively larger
*Blood	Fewer red corpuscles
* ,,	Less hæmoglobin
,,	Specific gravity less
*Bones	Lighter, more porous, thinner
*Bosses (parietal and frontal)	More marked
*Brain	Weight relatively superior
Breasts	Distance between nipples often less
Canine fossa	Shallower
Carbonic acid	Less eliminated
*Cartilages	More delicate
Centre of body	Higher up
*Cephalic index	More brachycephalic
Cerebellum	Relatively larger
Chin	Usually less prominent
Clavicle	Relatively longer
*Condyles (occipital)	Smaller
*Contours (of bones, etc.)	Smoother; more delicate

Characteristic.	In Woman as Compared with Man.
*Cranial capacity	Smaller (absolutely)
*Cranium	Lighter, lower, more delicate
*Crests	Less marked generally
Crests, iliac	Higher, wider
Curve (lumbo-sacral)	More pronounced
Ears	Smaller, more delicate, less defective
*Erect posture	Less removed from quadrupedal
Eyes	Slightly smaller generally
*Eyebrows	Less marked
*Face	Smaller, relatively broader, relatively shorter, lower
Facial angle	Somewhat more prognathous
*Fatness	Fatter
Features	More delicate
*Feet	Smaller, shorter
Finger, index	Longer
*Forehead	Straighter, narrower
*Glabella	Much less developed
Hair	More vigorous on head, less on face and body generally
,,	Growth greater in pubic region
,,	Individual pubic hairs larger
,,	Baldness largely absent
*Hands	Smaller, relatively slightly shorter
*Head	Relatively longer
Heart	Smaller
*Height	Less generally (except *ca.* $11\frac{1}{2}$-$14\frac{1}{2}$ yrs.)
Hips	Relatively larger
*Inion	Smaller
Inter-orbital distance	Narrower
Jaw	Smaller
* ,,	Angles decidedly large
,,	Relatively smaller weight
,,	More rounded
Kidneys	Absolute weight somewhat less
*Larynx	Less developed
Legs	Less straight
*Ligaments	More delicate
*Liver	Larger relatively
Longevity	Greater
Lungs	Relatively somewhat smaller
Malar bone	Edges smaller
Malformations	Rarer
Mouth	Wider
*Muscles	More delicate
*Muscular force	Much less
*Navel	Greater distance between navel and pubes

Characteristic.	In Woman as Compared with Man.
*Neck	Relatively shorter; rounder
Occipital foramen	Smaller
Orbit	Diameters smaller
Oxygen	Less absorbed
Pelvis	Broader, more delicate, relatively shallower
Perspiration and sweat	Less
Phalanges (of foot)	Shorter
Pigmentation	Darker (?)
*Prehensility	Greater
Pressure, arterial	Less
Prognathism (upper face)	Slightly greater
Prognathism (total face)	Greater
*Pulse	Higher
*Respiration	Less vital capacity; number of respirations per minute slightly higher
Ribs	Straighter, thinner
*Ridges	Less marked
Shoulders	More sloping
*Sinuses (frontal)	Less prominent
*Skin	More delicate and rosy
Spinal column	Lumbar portion longer and more arched
Spleen	Larger
Step	Shorter
Sternum	Relatively shorter
Stomach	Relatively larger
*Strength	Much less
Teeth	Smaller generally (?)
,,	Two upper mid incisors larger
*Temperature	Somewhat higher
*Thighs	Markedly shorter and larger
Thorax	Relatively shorter and broader
Thumb	Relatively shorter
*Thyroid gland	Larger
Toe (great)	Relatively shorter
*Trunk	Relatively longer
*Tuberosities	Less prominent
Urea	Less in quantity
Urine	Absolutely rather smaller in amount, relatively greater generally
Venous system	Capacity relatively larger
*Weight	Less (except *ca.* $12\frac{1}{2}$-$15\frac{1}{2}$ yrs.)
II.	
*Affectability	Greater

Characteristic.	In Woman as Compared with Man.
Alcoholism	Much less common
Ambidextry	More common
Anabolism	Very much greater
Appetite	Smaller (?)
Assimilative power	Greater
Blushing	Very much more frequent
*'Breaking out' (destructive violence)	More common
Charity	More developed
Colour-sense	Greater
Cretinism	Less common
Criminality (except prostitution)	Much less
Cruelty	Greater
Deaf-mutism	Less common generally
*Destructiveness (except war, etc.)	Greater
*Digestion	More rapid
*Diseases	Scarlet fever, scleroderma, herpes zoster, mitral disease, more common
*Disvulnerability	Greater
*Dreams	More common
Ecstasy	More common
*Emotionality	Greater
*Equilibrium	More unstable
Eye-defects	More common
*Feelings	Much more in play
Genius	Much less common
*Gluttony	More common (?)
*Hallucinations	More frequent
Hearing	More acute
*Hunger	More frequent
*Hypnotic phenomena	More common
Hysteria	More common
Idiocy	Less frequent
Imbecility	Less frequent
*Impulsiveness	Greater
Irascibility	More common
*Irritability	More common
Katabolism	Very much less
Lefthandedness	More common
Manual dexterity	Less (except needle-work, a few special professions)
Memory	Better
Mysticism	Much less frequent
*Pain	Less affected
Passions	Those of weakness more common

Characteristic.	In Woman as Compared with Man.
Patience	Greater
Perception	More rapid
Pity	Greater
*Pouting	More common
*Precocity	Greater
*Ruse	More frequent
Sense-judgments	More accurate generally
Sight	Range of sensation inferior; power of discrimination slightly greater
Smell	Less keen
*Speech	More fluent, especially in lower forms
Speech-defects	Less common
*Suggestibility	Greater
Suicide	Less common; methods passive more commonly
Tact	Greater
Taste	More acute
Temperament	Lymphatic; changeable
Touch	Less keen (?)
Variation	Less (with important exceptions)
Vice	Less
Vitality	Greater
*Voice	Higher, shriller
*Zymotic diseases	More susceptible
III.	
*Abstract thought	More docile and receptive; less capable of abstraction
*Acting	Greater ability more frequently displayed
Adaptibility	Greater
Art	Less gifted in pure artistic impulse in high culture
Astrology	Now chiefly supported by women
Business and industrial capacity	More industrious, less markedly intelligent (except in the post-office and some other special employs)
*Conservatism	Greater
Conventionality	Greater
Cunning	Greater
Diplomacy	Greater (when allowed full scope)
*Dissimulation	Greater, more frequent
*Exaggeration	Often greater
Executive ability	More common
Fiction	Less gifted as to quantity and versatility than as to artistic power

Characteristic.	In Woman as Compared with Man.
*Imagination	Greater (among primitive peoples)
*Individuality	Less developed
Intellect	'Pure intellect' less
Intuition	Much greater
*Logic	Less
Mathematics	More gifted than generally believed
Medicine	More gifted than generally believed
Metaphysics	Little gifted
Music	Little gifted as to genius in inventing instrumental music and composition
Originality	Less
Painting	Great genius rare
Poetry	Highest genius rare
Politics	Woman's genius great
Religion	Devotion greater, creative power much less
Sacrifice	Instinct much greater
Sculpture	High genius very rare
*Simulation	Greater
Singing	Genius greater
Superstition	Greater
Sympathy	Greater

Sexual Differences in Childhood.—Professor Vitale Vitali, of the Royal Lyceum at Forli, has made detailed anthropological-pedagogical investigations of 303 boys and 372 girls, between the ages of 11 and 20 years, belonging to the region of the Romagna in Italy. Among the conclusions as to sexual resemblances and differences, which Dr Vitali arrives at, in this very important study, are the following:—

A. Physical.—1. In the girls of the Romagna there is a lack of that post-pubertal development which in the boys seems to grow out of love for physical exercise. 2. At all ages the trunk (height sitting) of girls is longer than that of boys, the lower limbs of woman, in proportion to her stature, being, as is well known, shorter than those of man. 3. While at all ages in the girls of the Romagna the finger-reach is greater than the stature, the proportion of stature to finger-reach decreases with age, instead of increasing, as is the case with the boys—a difference which Professor Vitali seems to attribute to ethnical influences as well as other facts connected with the lack of post-pubertal development. 4. The skin of girls is clearer

than that of boys, also the colour of the hair and eyes, in which lighter shades prevail. 5. The girls are more brachycephalic than the boys, and the range of divergence of the cephalic measurements is small, woman seeming to conserve better and longer the racial traits. 6. The greatest differences (cephalic) between girls and boys—differences seemingly greater than those noted in other races—occur in the eleventh, twelfth and thirteenth years. 7. The maximum dimensions of the cephalic diameters are reached much sooner in girls than in boys, so also with the horizontal circumference — the other cephalic elements reach their development in girls in the 13-14th year, in boys at the 16th. 8. The frontal index of girls is higher than that of boys up to the sixteenth year, beyond that lower, the forehead of woman being much narrower than that of man. 9. The face of girls is narrower and longer than that of boys. 10. At all ages the facial angle of girls is higher than that of boys—women (as Ecker noted) having more convex and prominent (at top) foreheads, an æsthetic, and also an infantile characteristic. 11. While in boys a high facial angle seems to be correlated with lively intelligence, no such relation seems to exist in the case of girls.

B. Physiological and Psychological.—1. The proportion of myopia is less among girls than among boys. 2. The chromatic sense (Preyer's method) is weaker (erroneous answers 16.1 per cent. to 7.6 per cent.) in girls than in boys, and with the former the colour-names are later in their correlation with the corresponding perceptions. 3. The memory of visual images is much weaker in girls than in boys. 4. Girls are more sensitive to pain, more irritable, less tolerant of external excitations than boys; the author concludes (with Ottolenghi) that, so far as their resistance to physical pain is concerned, women *seem* more sensitive, not because they resist pain less, but because they are less tolerant (with which Sergi also agrees). 5. Girls react by instinct more quickly than boys to all external excitations of a harmful nature, but react only to the present sensation from the moment that they perceive it, and are dominated by it. 6. The cephalic development of girls is much more precocious than that of boys, and is almost complete at the epoch of sexual development. 7. Up to the age of 13-14 years girls are better students than boys, then they stop suddenly and remain thereafter inferior to them—sexual maturity bringing about, as it were, a sort of mental regression or arrest

of development. 8. Girls present a less proportion of cephalic anomalies than boys, anomalies of the forehead being the most numerous. 9. Physical and psychical infantilism are more marked in girls than in boys. 10. In girls the relation is less clear than in boys between moral and degenerative characteristics; women, however, possess defective and intellectual weakness; with them the effort is always more than the act, and psychical operations are more fatiguing. 11. In degenerate girls, as in boys, the qualities peculiar to the people of the Romagna—impetuosity, impulsiveness, etc.—appear in exaggerated form. 12. For both boys and girls in the pre-pubertal epoch the harmful and fatiguing exercises of the gymnasium are to be avoided, and certain games (recommended by Mosso), walks in the country, and kindred forms of recreation to be preferred, while in the education of girls special attention should be paid to the development of the æsthetic emotions and feelings, and nervous work of all kinds leading to psychic and moral perversion, and undue stimulation or excitation of the sexual organs eschewed as far as possible. 13. In the post-pubertal period the inferior physical development of woman seems to be accompanied by an inferior intellectual strength, due largely to the lack of muscular exercise—a deficiency for the bettering of which Professor Vitali warmly commends gymnastics. 14. Intelligent girls, who are better students, possess a sounder organic constitution, and are more robust. 15. The great need of girls at this period is 'increase in intellectual adaptability to the assimilation of external phenomena,' and this increase in the assimilating power of the intellect may come through well-considered physical exercises. 16. In girls up to the age of 14-15 years the tendencies to sobriety and parsimony are weak; then with the sexual development they become enervated, and the apathetic tendencies predominate. 17. In the girls of the Romagna, although the tendencies connected with the instinct of preservation are not so very persistent, those which are of a defensive or offensive nature (*e.g.*, fear and anger, which take on a pathological form) are, as in the case of boys, very persistent; also envy and egotism—intellectualised forms of male tendencies favoured by the precocious development of the intellectual faculties of woman, her inferior organic development, her more sedentary life, domestic education, etc. 18. In both boys and girls of the Romagna the intellectual tendencies *par excellence* are but little developed;

æsthetic excitation, romantic ideality, altruistic feelings, strength of imagination (and the emotional, moral, religious phenomena dependent thereon), abstract tendencies, religious feeling, mysticism, are all more or less weak—defects which the author attributes to 'the stability of the psychic characters of this people, with whom the organising action of a few heads has always great success.' 19. As compared with those of men, the few active elements constituting personality seem, in woman, weak; passionate, impressionable characters are not common, and the dominating tendencies undergo rapid alternations of effort and inhibition, while they do not seem to be so clearly determined and determining as with men. 20. The female character is more temperate than the male; woman has a stronger instinct of preservation than man, and in all psycho-physical phenomena her manifestations are more passive, whence she is a better practical judge. 21. The persistency of tendencies in woman, though less than that of man, is, nevertheless, great. 22. Girls are more suggestible (Binet's method) than boys; woman's readiness to yield to suggestion, Professor Vitali thinks, indicates not only little certainty of judgment (a mark of weak character), but largely intellectual indolence; girls, *e.g.*, do not modify their first judgment in consequence of a new analysis, or at the intimation of the suggester, but make a new answer, opposite or contrary to the first, as if two opposite ideas, having a common measure, made a saving of intellectual labour. 23. The psychic system of the woman of the Romagna is less coherent than that of the man, and the exaggerated admiration of self-qualities (leading to more coherence in moral qualities, etc.) is not so intense; the woman of the Romagna rules in the family (but much less in society) because the man wills it. 24. Girls possess more than boys the faculty of adapting themselves and moulding themselves to the environment, and a larger measure of common sense, which, could woman develop less suggestibility, more self-judgment, more ability to examine and decide after analysis and investigation, more confidence in her own personality and less reliance upon the sayings and doings of others, would enable her to exercise greater influence in civic life and social actions. 25. The civil and social inferiority of woman springs in great part from her lack of confidence in herself and from her passive submission; her rise lies in the development of her own responsibility for her own acts, and the strengthening of

her will and power to impose respect. 26. The greater success of girls attending boys' schools is due to the increased severity of the *milieu* and the absence of that affectation of caress and protection so noticeable in girls' schools. 27. Co-education has many very marked advantages; girls in the community of life with boys tend to become free and sincere, less given to simulation, more able to analyse their own acts, to foresee the consequences of them, and to defend themselves against their own weaknesses. 28. In both girls and boys of the Romagna, emotional character not being highly developed, suggestive education (of the sort described by Thomas) is strongly recommended.

C. Educational.—1. Generally high intelligence and good school ability are parallel in the brightest girls, but in the pubertal epoch the percentage of scholarship is less than that of lively intelligence—a fact which Professor Vitali attributes to the less resistance to work manifested by the psychic organism at this period. 2. The girls of the Romagna possess predominantly mediocre intelligence, but as related to scholarship it is superior to that of the boys, at least until the age at which they attend the lower secondary schools. 3. At all ages (method of Lindley) girls have a greater intellectual tension, and power to make a greater single effort. 4. The weak power of association of ideas (the memory of single facts is easy) in girls is related to weakness of will and abstraction; in women, the mere curiosity of single facts can constitute the association with others and retain the memory of them. 5. For organic or atavistic reasons, mental operations do not excite in girls energetic affective states—ideas, logical reasonings, the operations that determine knowledge, leave no lasting memory; it is difficult in girls, especially at puberty, to produce and to maintain that condition of intense attention necessary for promoting the association of ideas. 6. The attention of women seems not to be motor, but static or theoretical; from the pose and other external manifestations it would seem as if women were more attentive than men, but experiments prove that this state is often weakness, intellectual inertia; in women is noted not that state of unconsciousness resulting from distraction, but a state of immobility, in which they (by reason of their organic constitution) remain more easily, and with which agrees the condition of intellectual inertia. 7. Girls (since attention demands a great expenditure of physical energy) are

unable to keep the intellect long in tension; attention does not persist long, except by simulation, and remains in a sort of passive condition. 8. The spirit of observation (as seen from the study and teaching of natural history) is not less developed in girls than in boys, but may seem so, because in both sexes the observation does not attain with equal success the end of causing the mind to reflect upon the things observed, it being difficult to arouse in girls a reflective attitude of the mind towards sense-perception. 9. The imaginative and associative faculty in girls is weaker (as determined by experiments as to mind-content when a given word is pronounced) than in boys. 10. The girls of the Romagna can, by study, rise to the comprehension of things, to the reason that analyses and comprehends, but not to the reason that sympathises and creates. 11. The school-girls of the Romagna, averse to minute analytic work, soon become fatigued when they rise to the higher mental operations, their development of mind not permitting them the intellectual emotion which urges to work and determines the direction of psychic energy. 12. The greater number of rejections occur in the preparatory classes of the normal schools, in literature particularly, the number being much less in the sciences, which, together with the greater progress in the technical schools (attended by many girls), Professor Vitali attributes to a greater liking for the sciences and to the influence of co-education. 13. In the gymnasia the greater number of rejections take place in the Quarta and Quinta, and in Greek and arithmetic. 14. The best results among the graduates (girls) of the lyceums have been achieved by those devoting themselves to medicine and the sciences. 15. Of the girls graduating from the lyceums, all were of good moral conduct, while of those coming from the public schools, 5·35 per cent. seem not to have acquired in their school course the sentiment of moral duty. 16. The statistics of the normal schools seem to show that the majority of girls attend them, not to devote themselves to the profession of teaching, but to learn; and Professor Vitali, holding the family and maternity to be the highest ideals of life for woman, would assign to the normal schools the task of preparing good women and good mothers. 17. The education of girls hitherto is largely responsible for the weaker will of woman; education for them has been negative instead of positive; the word to them has been 'abstain, be contented,

bear,' instead of 'will, work.' 18. The 'rests' made necessary by woman's organic constitution may be utilised for the cultivation of the less-developed faculties, *e.g.*, imagination, abstraction, etc.

In connection with Dr Vitali's thorough-going investigations, one may read Miss E. H. Bentley's summary of 'Sex-Differences that have been brought out by Child-Study.'

The Child-Type and Race-Types.—That the child, the woman, the best types of men of genius, and the best types of men in modern civilised societies (cities especially), where the arts of peace outweigh the arts of war and where industrialism has sustained the amelioration of toil due to modern inventions, are the best representatives of the race-type, the promise, in one way or another, of the man to be, is a view held by many authorities, though not by all. Morselli, the Italian anthropologist, thinks it equally unjust to speak of the inferiority and childlikeness of woman and the senility of man, both types being equipotent and equivalent in their fulfilment of their biological, psychological and social functions; and Mantegazza rather inclines to see two parallel existences that do not touch each other, each having a different task to fulfil, although in his study of physiognomy he notes the fact that the expressions of woman are often characteristically childlike, as are those of men of genius. Lombroso, who notes the childlikeness of woman and of the man of genius, uses it, in common with many other writers of his school, as an argument in favour of the degeneracy of both. Topinard places woman, anthropologically, somewhere between man and the child. Dr Franz Boas[1] considers that women and children present the most generalised forms of race-types, and argues that the children of all races present striking similarities as compared with the notable dissimilarities of their parents, although women resemble one another from race to race more than do men (60, p. 16). The female sex, he holds, 'is in all the proportions and forms of its body more like the child than the male, and the most specialised types appear among the male sex.' But who, he asks, would think of explaining 'this earlier arrest of development as mark of a lower type.' The fact of early arrest itself is not necessarily an indication of lower type or of degeneracy. As Dr Boas observes (60, p. 14): 'While in man

[1] *Science*, N.S., Vol. VI. p. 883.

the face develops moderately only, it grows considerably among the apes. The earlier arrest in this case is, therefore, an indication of higher type. Thus it will be seen that it is not the earlier arrest alone which determines the place of a race, but the direction of this development.' The 'degeneracy' of the human face is thus a step forward, not backward. So, too, with certain of the characteristics of woman.

That the child is 'the father of the man,' a sort of ideal somatic father, has been maintained by more than one writer. The theory of Dr Ranke on this point has been thus summarised: 'There is an ideal infant type possessing proportions that are common to the majority of the children of all races, such as large head, long body and short limbs. During subsequent growth, some of these features may be retarded, or advanced, thereby resulting in the changes which distinguish the races. The Mongolian stands nearest to the ideal type. with the Malayan next, while the African is farthest away, and the European occupies a middle position. The progress of the Mongolian is towards a smaller head, shorter body and longer limbs. The almond-shaped eyes are due only to arrested growth, as are the constant proportions which are visible in the African race.' [1]

Ranke's view, to some extent at least, is shared apparently by Dr Boas, who, in his excellent essay on 'Human Faculty as Determined by Race' (60, p. 17), remarks: 'We find that the characteristic differences between man and ape are often more pronounced in the negro than in the white race, and we may say, with Ranke, that many proportions of the lower races are to a higher degree human than those of the white,' qualifying, however, his statement by saying in reservation that 'the proportions of the body do not depend entirely upon descent, but just as much upon mode of life.' Havelock Ellis also supports in general terms the contention of Ranke, observing (183, p. 24):—

'In certain characters, however, the adult European is distinctly at the furthest remove as well from the simian and the savage as from the infantile condition; this is especially so as regards the nose, which only reaches its full development in the adult white. In some other respects, as in the amount of hair on the body, the adult European recedes both from

[1] *Amer. Anthr.*, Vol. II. p. 316.

the specifically human and from the infantile condition, and remotely approaches the ape.'

According to Ranke, the Mongolian race (with which he affiliates the American Indians and the Malay peoples) presents the most striking general analogies with the child-type, while the Australians and the negroes, in the proportions of their body, are the most remote from it — the European races taking a mid-position between these two extremes. The relatively larger head, longer trunk, shorter arms and legs bring the Mongolian nearer to the child. The peculiarities of the negro in respect of body-proportions, when compared with the child and with other races, are not theromorphic analogies, bringing him nearer to the ape, but rather exaggerations of the typically human forms—relatively smaller head, longer trunk, arms, and especially legs—carrying him farther along the line of upward development as seen in the progress of the individual from childhood to adult age. Ranke goes so far as to speak in the same terms of the black colour (not present at birth, and having some analogies with brownish colour in Europeans), the prominent lips (certainly not ape-like), the marked lumbar curve—these are all exaggerations of something noticeably human, not peculiarities that link the black races closely with the ape. In some respects, on the other hand, certain cranial peculiarities, which Virchow has noted, cause some of the black races to approach the child or the female type. Some peculiarities of the European races —the development of the face, the eyes, and especially the nose—carry them as far along the really human road of development as do the body-characteristics just mentioned in the negro (520, p. 115).

Judged by their larger head alone, the European races stand upon a level nearer the child than the negro, but the former's possession of a greater brain, together with their *rôle* in human history, seem to forbid the view that a developmentally low cranial form must always be associated with inferior abilities in general. Each race seems to possess something, or several things, typically human (often in excess); none possesses every one of them.

In his paper on 'Racial Anatomical Peculiarities,' Dr D. K. Shute notes the following changes or processes of evolution as now going on in the human body:—

Character.	Nature of Change.
Face . . .	decreasing in size
Facial suture . .	closing earlier
Cranium . . .	increasing in size
Cranial sutures .	closing later
Canine teeth . .	reduced in size
3rd molar . .	tending to disappear
8th, 9th, 10th ribs .	reduced in size
12th rib . . .	tending to disappear
Spinal curvatures .	,, increase
Pelvis (female) .	increasing in size (in correlation with cranium)
Big toe (bones) .	tending (through use) to increase in size
Little toe (bones) .	tending (through disuse) to decrease in size and number of phalanges by ankylosis

As 'anatomical peculiarities, which, taken together, stamp a race as high or low,' Dr Shute mentions the following, which are more or less simioid:—

Cranial sutures simple and uniting early
Nasal aperture wide, with nasal bones ankylosed
Jaws unduly projecting and chin receding
Wisdom teeth, well-developed, appearing early and permanent
Humerus unduly long and perforated
Calcaneum (heel-bone) elongated
Calf of leg small
Tibia flattened
Pelvis narrow

According to Dr Shute, 'measured by these criteria, the Caucasian stands at the head of the racial scale and the negro at the bottom' (593, p. 127).

In the discussion on this paper, Dr Frank Baker, taking into consideration the modifications from primitive environment which the anthropoids, the whites and the negroes have severally sustained, 'each having proceeded in development according to the condition of existence,' doubts the existence of the 'ape-like characters' of the negro.

'After examination of many bodies of Africans found in the dissecting-rooms,' says Dr Baker (593, p. 128), 'it seems evident that ape-like characters are no more common among them than among whites.' Again, in his address on 'The Ascent of Man,' we read: 'Between the lowest and most brutalised labourers and the cultivated and intelligent classes there exist anatomical differences as great as those which separate the white and the negro' (21, p. 319).

No human race, according to Sir William Turner, is so constituted, so far as the skeleton is concerned, as to place it in every respect above all others, nor does there exist any one race whose skeletal characters are such as to place it, in all its peculiarities, below all other human races. While, *e.g.*, the character of the skull and the pelvis in the European races remove them farther from the mammifers than the Australians, Bushmen, Negroes, etc., the proportionate relations of the lower limbs with the upper, of the humerus and the femur, bring the European nearer to the apes than are the black races generally. The Lapps and Eskimo, who, with respect to the proportions between the lower and upper limbs and between the humerus and the femur, are nearest to the apes of all the races of men, are nevertheless the farthest removed from them in the proportionate relations of the forearm and the arm, of the leg and the thigh. In respect to the proportion between the forearm and the arm the Fuegians seem to be the most pithecoid or monkey-like of men, but are very far removed from the apes by their pelvis, which is of a very high type.

The physical differences between white and negro children in the United States have been very recently investigated by Dr Ales Hrdlicka of New York, who has carefully noted the racial and sexual characteristics of some 1100 white and 300 coloured children from the age of five up to or a little beyond puberty. Among the principal points brought out are the following:—1. White children generally present more diversity, negro children more uniformity, in all their normal physical characters—a peculiarity which becomes more marked as age increases. 2. Physical abnormalities of congenital origin are much less frequent in the negro child, but acquired abnormalities (principally the result of rachitic conditions) are less frequent in the white child. In other words, the white child suffers more from being born, the negro child more from living in a certain environment.

Dr Hrdlicka (308, p. 62) notes also the interesting fact that 'the coloured girl, before the age of puberty, and sometimes even beyond this period, is a great deal more the shape of a boy than is the case with the white girl.' Such decidedly feminine characters as the shape of the shoulders and thorax, narrowed waist, large hips, fat thighs, which appear in white girls as early as eight years, do not become manifest in negro girls 'until after twelve years of age, or much later.'

ALASKAN ESKIMO GIRL.

(From *Rep. U.S. Comm. of Educ.*, 1894.) Illustrates the views of Fritsch as to primitive childhood under the influence of civilisation.

Civilisation and Food.—Dr Fritsch, a quarter of a century ago, emphasised the influence of civilisation upon the bodily characteristics of man, resulting sometimes 'in but a single generation in important modifications of the more external racial characteristics'—differences which, Dr Franz Boas observes, 'are quite in accord with the differences between wild animals and domesticated animals; and we all know how far-reaching the influence of domestication may become' (60, p. 20).

Civilisation means more or less regular work, with a sufficiency of reasonable food, and with these goes a rapid improvement in the musculature and general fulness of body, besides such development in particular of special limbs or organs as certain forms of labour and exercise inevitably entail. Dr Fritsch points out that the shoulder and pelvic girdle do not, among wild tribes (even with respect to individuals), as compared with racial type, reach the same degree of perfection found among those under the influence of civilisation. Hartmann, who has studied the North African tribes, confirms this statement, which was made by Fritsch, concerning the South African aborigines. The latter even goes so far as to say: 'Members of aboriginal tribes in the neighbourhood, and under the influence of civilisation, attain the best possible development of body, particularly with respect to general rounding of form, development of musculature and skeleton, and, above all, in facial traits' (223, p. 125).

The portrait of a Fingoe girl, grown up as a child-nurse among the whites, shows, when compared with her wild fellows, as Fritsch remarks, 'a softer, more rounded form of face, absence of the dull, wild expression, and an unmistakable impress of intelligence'—changes which, to a less extent, the portrait of a Fingoe man also exhibits. This greater intelligence of expression in the face has been noted by other observers.

Girls especially (when the evils of white civilisation are kept from them) benefit much by this contact and elevation, for with their own people life is hard, and they develop early, and as quickly fade.

Fritsch rightly warns against taking natives who have passed their lives in direct contact with civilisation, who have been brought up from childhood in the houses of the whites or in the missions, still more those who have grown up not in

their own country but in other lands, amid similar surroundings and influences as typical aborigines. Even upon the adult savage such influences have their effect, while upon the growing child they work unceasingly to round off the sharp corners of the body and to light the face with the soul of a more expressive intelligence (223, p. 239).

The Fingoes (Kaffirs) who carry loads through the surf at Port Elisabeth, in Cape Colony, and who have grown up on the spot, have a development of the forearm and the calf of the legs often far superior to that attained by the natives who have preserved their primitive character, and with whom the upper arm and the thigh are the parts more strongly developed in relation to the remaining musculature (223, p. 20).

According to M. Gauttard,[1] since the occurrence of the revolution of 1868, when the Japanese people began in earnest their rapid acquisition of western civilisation, some surprising changes in the national type have occurred, while in Cambodia the Europeans are said to be in process of acquiring the type and aspect of the natives. It has been often asserted, although the evidence is not at all convincing, that in the present population of New England there is in process a reversion to the type and aspect of the aboriginal inhabitants.

For G. Delaunay (155, p. 63) evolution is nothing more nor less than 'the nutrition of anatomical elements.' The anatomical and physiological differences which 'distinguish races, sexes, ages, constitutions, sides of the body, etc.,' and which 'assure the pre-eminence of the higher races over the lower, of the male sex over the female, of adults over children and old people, of the strong over the weak, of the right side over the left,' are, at birth, '*nil* or almost *nil*,' but increase from year to year until the age of about 45 is attained, then diminish more and more after 50, becoming again almost *nil* or *nil* in old age. The race is thus composed of opposite biological groups, viz.:—(1) The better nourished, more vigorous, more intelligent, made up of the strong (strong races, strong sex, strong ages, strong constitution, strong side); (2) the weaker (weak races, weak sex, weak ages, weak constitution, weak side). These two groups are united by individuals occupying intermediary stages or keeping the golden mean between the higher and lower groups—medium races, medium ages (adolescence, ripe age), people of medium

[1] *Rev. Scientif.*, 1897, p. 569.

constitutions. Naturally these anatomico-physiological differences carry with them certain pathological extremes.

Food conditions, no doubt, account in part for the conflicting statements of travellers concerning the physical condition and appearance of savage peoples. Thus, as a result of the French scientific mission to Cape Horn, we learn: 'The Fuegians are not the ugly, ill-proportioned beings that travellers have represented them to be. Like most short races, they are rather thick-set, and the head appears disproportionately large. The question of nutrition has great importance in relation to their external form, and natives who, in a state of semi-starvation, had a lean, repulsive look, acquired surprising grace, and even beauty of outline, after a period of good feeding. This was especially noted in the Fuegians, who were taken to Paris.'[1] The difference between a 'lean' year and a 'fat' year with some primitive peoples is sufficient to change their physical appearance most remarkably. Dr Frank Baker observes, warningly: 'Savages, when ill-fed and living in unfavourable conditions, may simulate the habits of anthropoids, and this has an effect upon their physical structure, yet not on that account should we too readily accept their close relationship' (21, p. 319).

Dr D. G. Brinton, in his discussion of the 'Variations in the Human Skeleton and their Causes,' assigns to 'deficient nutrition' a very extensive and important *rôle* in the production of such variations, among which he mentions dwarfed stature, true microcephaly, *spina bifida*, *rickets*, ill-developed sternum, bones in the sutures of cranium and face, epactal bones, wormian bones, *ossa Incæ*, exostoses, etc. He holds, with Bateson (against Darwin), that variation is greater in wild than in domesticated animals, and with Virchow that the 'anomalies of the bony structure in man are constantly and markedly greater among uncivilised than among civilised peoples, and consequently greater among ancient races than among those now living,' believing that 'in man its increase in the savage state evidently depends upon fluctuations in the food supply, and frequent changes and excessive stress of mechanical function as the prime factors' (80, p. 386). Regularity and certainty of the food supply were, as Morgan noted, mighty factors in lifting the early tribes of man in the scale of culture; the child, whose infancy made civilisation possible, was especially favoured,

[1] *Amer. Anthrop.*, V. p. 92.

and benefited among the primitive Aryans and Semites by the domestication of animals and the cultivation of plants, through the introduction of which he ceased to be the grudged member at the primitive table (435a, p. 25). All over the world *la misère* (lack, above all, of enough good things to eat), has, as Dr Brinton points out, made itself felt as a prime factor in the causation of human variation. This is so in France, where, according to Collignon, diminution of stature, in certain districts, follows closely in its wake, or in northern Europe, where, Virchow tells us, the dwarfish Lapps are '*Kümmerformen*, as compared with their cousins, the Finns,' or in the Kalahari desert in South Africa, with its miserable Bushmen, of whom the shortest are also the most wretchedly nourished. Primitive man is twin-sufferer with the modern child from this ill-nutrition. To be able to eat all one wants is by no means the endowment of all the human young at the present time, very many of whom are decidedly worse off under the *régime* of civilisation than when the command, 'feed my lambs,' was first given out, and man had made for himself a 'land flowing with milk and honey.' To the effect of good food, more even to that of fresh air and change of environment, are to be attributed the betterment and improvement of the physical condition of children brought about by the 'outings,' 'summer trips,' 'vacation colonies,' etc., which, since the initiative of Pastor Bion of Zürich in 1876, have spread over all the countries of Europe, so that in Denmark 'winter outings' even have been recently instituted. The general tendency of these 'outings,' the length of which varies from a few days or weeks to several months, is, judging from the accounts and descriptions of Varrentrapp and Bion and the more or less scattered but constantly increasing fugitive literature of the subject, to increase the weight of the boys and girls more and more frequently than their stature, although the latter is very often notably affected. Some of the marked increase of weight in certain 'outings' has been held to be due to the little exercise indulged in by the children, but other statistics call this in question. Another thing noticed is the greater effect of 'outings' in the country and mountains as compared with the so-called 'town-colonies' and 'milk-colonies,' although Cologne in 1886 showed about the same increase in weight for both town and country 'colonies.' With some children no increase in weight or in stature could be noted, and a few even de-

creased in weight, while others were made sick or not at all improved by the change. It was also remarked, in some cases, that after the return from the 'outing' the children grew more slowly, or even decreased a little in weight, which decrease, however, was usually soon made up for. It is quite evident that here, as in so many other cases, no panacea for all has been found, and that 'outings' do not, and probably never can, produce the same results in all children (57).

Dr Hrdlicka (308, p. 40), from a comparison of the measurements of Worcester (Mass.) school-children with those of children of the New York Juvenile Asylum as to length of trunk and of lower limbs, comes to the conclusion that 'it is possible that it is in the lower extremities where lies the principal defect in the growth of the badly-nourished children.' As is well known, the lower limbs of the new-born infant are very short, and for some time the limbs grow proportionately more than the body, 'the greatest length of the lower limbs seeming to be attained from the thirteenth to the sixteenth year,' and after the fifteenth or sixteenth year and onward till the cessation of growth, 'the body seems to increase slightly in proportion to the lower extremities,' the greater proportional growth of the latter having ceased.

The effect of food and civilisation upon the growing child of all races of men is evidently very marked, but it is going too far to seek to explain all the differences of importance between the races as originally of nutritional origin, for the new social *milieu* of civilisation and the social advances of the race century after century must account for not a few of these —the decrease in the size of the jaws, etc., for example, being as much due to social evolution as to nutritional, and the same thing may be said of other departures from the brute type which may be found in woman and the child. The European child represents, in fact, a genial form of the Mongolian general type, whose childlikeness in many physical and mental characteristics has long been recognised. For this reason the study of the development of Japanese children who are now being brought more and more under the influence of European and American food and culture, is of the highest interest, as is also that of primitive peoples, capable of assimilating in their own way more or less of our civilisation, such as the unspoiled Malays of the East Indies. If the Indo-European child is physically but a specialised form of the

Mongolian type, the history of the extreme Orient is of the greatest importance to the student of human evolution.

There seems to be increasing justification for some such view as that just indicated, or a modified form of it, more in harmony with the doctrine of descent, and the significant relationship of woman and the child is assuming more and more importance in interpretative anthropology. There is deep truth in the words of Havelock Ellis: 'When we have realised the position of the child in relation to evolution we can take a clearer view as to the natural position of woman. She bears the special characteristics of humanity in a higher degree than man (as Burdach pointed out), and led evolution in the matter of hairiness (as Darwin, following Burdach, pointed out), simply because she is nearer to the child. Her conservatism is thus compensated and justified by the fact that she represents, more nearly than man, the human type to which man is approximating' (183, p. 392). The study of primitive woman and of primitive children has hardly yet begun, but what little we have learned bids us hope for much more light upon the problems discussed in these pages from such unexhausted sources.

CHAPTER XI

SUMMARY AND CONCLUSION

THIS study of the child began with the consideration of the helplessness of the human infant and its significance. Between the state of the human being at birth and his adult perfection there exists a wider gap than can be found in the case of any of the lower animals, the prolonged intra-uterine life being succeeded by a period in which the child is able to survive only through the sociality of those who form his immediate environment. The reason for this 'prolongation of human infancy' in the evolutionary process has been made clear by Fiske; it is Nature's device to ensure the sociality of the race. The helplessness of the child was necessary to bring about the helpfulness of mankind. The great social virtues that now distinguish man were born of the need for taking care of his offspring unable to help itself. The prolongation of the infantile period provided an epoch of plasticity and educability during which the race-acquisitions could be transferred to the individual, and the forces of heredity, in so far as that is possible, directed and moulded after the wisest fashion. If Nature had brought men and women into the world adults, already grown up, the intelligence of the race must have been vastly less than it is now. Rousseau goes too far, perhaps, when he declares that, under such conditions, human beings would have been 'perfect imbeciles,' but it is evident that through being a child, by the growth-process, by the development of his own faculties from weakness to strength, from uselessness to expertness, man has come to be man. The helplessness of infancy, again, is Nature's pledge that man's great brain-power—for he has advanced in intelligence more than in any other way—shall not serve for his undoing or work to his hurt before he reaches manhood with its innumerable

social and cosmic restraints. His comparatively witless infancy foreshadows the intellectuality of his later years. The moment Nature decided that, with man, the struggle for existence was ultimately to be altruistic, rather than selfish, she was forced to make man weak in order to ensure his later strength in the right direction.

With the advance of civilisation and social evolution the 'infancy' of man has been prolonged so as to include all the years of adolescence and youth, practically all the immature periods of life—which is made use of to nurture and to school the individual—so that in the highest civilised communities the thirtieth year often represents the time at which the man has finished what some animals accomplish in as many days or even hours, to say nothing of those whose instincts are almost ready for use at birth.

To leave the child absolutely helpless during all the period of infancy, and to bring him into manhood by a sudden waking up which should shock him into sense and into wisdom, is hardly Nature's way. The playfulness of young animals and of the young human being have been commented upon by almost all philosphers, ancient and modern. For a long time the exuberance of play seemed of itself to account for its existence; it was surplus energy, taking on here and there an æsthetic form and changing ever and anon to art. The relation of play to the various arts and activities of human social life seems only recently to have received its true interpretation. When Professor Groos says, epigrammatically, that 'the animal (or the child) does not play because he is young, but has a period of youth because he must play,' he comes very near the root of the whole matter. Partly, at least, 'the very existence of youth is due to the necessity for play.' Youth was furnished to the animal in the natural order of things for the purpose of enabling him, when they made their presence felt, to use and to control the great mass of innate instincts which he inherits as a member of a race or species with a long and varied past. In a word, animals, and man more especially, possess youth because the creation of art and civilisation was a necessity —and these had to be fashioned from instincts through the transforming power of play. A safe and considerate use of the great intellectuality of the human adult was secured by making a considerable portion of his early life physically and even mentally helpless, and in like manner the morality and the

culture of the adult was ensured by the invention of a playing childhood. Civilisation is a result of man's having been young; play has laid the foundations of culture by organising his instincts and busying them in ways that tell for the future of man. Play extends its influence over everything in childhood, and for the child everything can be the subject of play.

Exactly where play leaves off and work begins is a moot question, for there is always work in play and play in work. There is something in the view that play and work represent in general the chief distinction between the life of the primitive man and that of the civilised, but this point has been made too much of. Here, again, the genius approaches the child, for with him it is extremely difficult to distinguish work from play; indeed, the highest forms of work known to man, as exhibited in the scientist, the poet, the orator, the artist, lie very close to the play of the child. The intimate connection even now existing between the plays and games of children and the various forms of work still current or known from the past have furnished suggestions which have been utilised by educators in many lands, some of whom have endeavoured, by the establishment of play-grounds, or play-schools, to educate children along the lines of their natural bent and disposition, seeing in play, as Froebel did, 'the germinal leaves' of later life. But play, the child's activity, like the utter helplessness of early infancy, his seeming rest, may not be too freely tampered with. A minimum of wise, directive interference, with a maximum of wiser, sympathetic encouragement, even with participation, at times, is the sanest policy. If the teacher can ever be a child with the child, he or she can do so judiciously here. But never must the *naïveté* and the genius of child play be too soon changed to the mere copy of adult word and deed.

The study of the resemblances of the young and of their genius has taught us how Nature seems to foreshadow her triumphs, and how, by the unity of the young, she enables us to establish the less apparent and less intelligible unity of the adult and the aged. From the resemblances of children all over the globe among the various races of men we can argue the general physical unity of the human species as well as the general psychical unity of mankind. And when we leave man, it is the young ape, and not the adult simian, that bears

the greatest likeness to him ; the immense difference in sociality, which the possession of the erect position with its amplitude of extra-organic aids to development, and the prolongation of human infancy, have made possible, accounting for a vast amount of difference between the aged human and the aged simian.

The comparison of the young human being with the young gorilla, and of the adults of these species with each other, exemplifies in the best manner possible the *rôle* of intelligence and sociality in the evolution of human kind. With the gorilla, the necessity for the production and maintenance of 'an effective fighting apparatus' subordinated the general structural features to that end, and we have, as a result, huge jaws, large teeth, and a ponderous skull well marked with ridges for the insertion of strong muscles. In man, the necessity for the building and continuance of a capacious brain-case subordinated all structural features of the skull to that end, and we have smaller jaws and teeth, weaker muscles and attachments, and a lighter, smoother, finer skull. With the gorilla the head had to win its way by brute strength, in man by intelligence—and with intelligence came, *longo intervallo*, beauty.

The dim prophecy seen in the skull of the young gorilla, who seems striving hard to be human, is realised in man, and the face becomes beautiful. This softening and beautifying of the human skull and the human countenance, upon which Papillault has dwelt, is one of the most remarkable evidences of the effects of social evolution upon man. Considerations of food, as Papillault says, cannot fully account for these changes, for assuredly the European peasant of the Middle Ages fared not much better than the negro ; nor are they necessarily the result of growth in intelligence, for, to this day, a very high intelligence may still be found allied with the physical signs of the brute. The change of the struggle for existence from an individual to a social one is their main evolutional source. Just as the mother sheltered her child before birth, delaying his entrance into the world until he was ever more prepared for it, so, in the process of the ages, the social *milieu* has come to be for the human being in the later stages of his development a sort of protective envelope, allowing him to dispense with the natural physical arms and defences with which his remote ancestors won the battles of their day. The beautifying of the human face, in particular—

even contact alone with civilisation, as Fritsch has noted, seems to give a touch of it to the savage child—shows how the social *milieu* has been able to modify profoundly some of the most marked characteristics of the precursors of man. The beauty we sometimes see in very young children, their genius (so often wrongly thought to be mere precocity), which often the adult, who in aging falls from the ideals of childhood, retains, and the practical unity of childhood generally among all races of men, represent Nature's effort to start the individual with as fair a promise as she did the race, when the first infant simian, who was destined to be a man, foreshadowed the human race to be.

That men, as they mature, do not fulfil perfectly the rich promise with which childhood begins, that geniuses are still very rare, that old age is often useless both to the individual and to the race, is to a great extent the fault of society itself, which has not yet learned the art of developing the individual from infancy onward in such fashion that he remains a child while childhood lasts without failing to be a man when manhood comes, nor yet accomplished the task of allowing the genius to be 'born and made.' Human social and educational institutions must slowly acquire the power of strengthening manhood and rejuvenating old age from the fountains of childhood, of fertilising the Sahara of the 'âge de retour' with the oasis of 'green old age,' of recovering for the race the golden age of old age which the hurry and bustle of modern civilisation with its attendant evils so often fails to utilise.

In a sense, genius itself is only prolonged infancy, and as such is perfectly normal, and in no way a neurosis, a malady, something abnormal *per se*. Society has been so busy with the child, the general genius, that it has not yet found ways and means for the right growth and perfection of the adult individual genius. But his childlikeness assures him the ultimate care and protection of that same power which has shaped in a certain similitude woman and the child, and is even now seeking to shape him after the manner of both of these. Nature, in fact, seems to have made woman somewhat like the child in order that, in growing up, man might not depart too far from the original model. But it is in large part through the preservation and further development of the resemblances of the young that the highest human likenesses and affinities are secured. Rather the parent strives to be like the babe than

the babe to be like the parent. The things often but dimly foreshadowed in the child seem to be those which will one day be the most valued possession of the race.

The variety and manifoldness of childhood and its phenomena, the periods into which human life seems naturally to fall, the ebbs and flows of growth and energy in the body and its members, the simultaneity, temporal diversity, periodicity, oscillations, recapitulations, overlappings, etc., of physical, mental and moral development, in the child especially, have attracted the attention of all students of human life and its expressive products.

The 'ages of man,' the epochs noticeable in the origin and growth in the individual of somatic characteristics, anatomical and physiological peculiarities; 'critical periods,' physical and intellectual; epochal development of the senses, of language, etc.; periodicity and epochism in the growth of the sense of self, of character, of emotiveness, of psychic activities in general and in particular, of sociality, of religiosity, of morality, of the various artistic activities, etc., furnish a multitude of facts, many of which, seemingly, cannot receive their interpretation except upon the theory that they represent things once important, useful, necessary to, or characteristic of, the race-ancestry of the individual, in whom they are repeated more or less completely.

The co-called 'recapitulation theory,' which many scientists, though not all, hold to be a necessary part of the greater doctrine of evolution, is now interpreted to mean that the individual repeats more or less distinctly the chief stages, physical and mental, which the race has passed through before him. Embryonal development was, as Professor Minot has shown, only possible with the appearance of the large yolk, the further growth of which practically abolished larval development as a further factor in evolution. With the advent of the human female, further development of the embryo in the womb occurred, and with the coming of the social *milieu* of humanity, a sort of 'second mother,' time was gained for just such a repetitive process as the recapitulation theory implies. Just now, however, Nature seems struggling with the problem how, by 'short cuts,' abridgmetns, 'telescopings,' etc., to reduce the repetition to a minimum—her ultimate object, perhaps, being to render the mental and moral recapitulation as little discernible in the child as is at present the physical. And the

higher culture with which the child, as compared with the savage and the young animal, finds himself surrounded, is a distinct aid to her in this effort. Thus post-natal recapitulation seems bound to be less and less necessary with the evolution of higher forms of culture and enlightenment. That Nature devised the recapitulation process in order to gain time for the phenomena connected with the production and exploitation of man is only half an explanation at best.

An earlier form of the recapitulation theory—that there was a parallelism between the way in which the individual attained culture and that in which the race had done so—dating back to Rousseau at least, was further extended by later educational philosophers to mean that the so-called 'culture-epochs' in the history of the race were repeated in the history of the individual, a view made much of by the modern school of Herbartians. The best scientific investigations, both of the child and of the various races of men, have shown how difficult the establishment and delimitation of such 'epochs' are, and to how great an extent they are subject to the creative, destructive and transforming influences of cosmic and social environments, incidents of progress, national and individual history, etc. The consistent evolution of a child through these 'stages' or 'epochs' is as hard to verify as is that of a race. Nevertheless, the lines of advancement of mankind in general do seem to be paralleled in the development of the child, in outline at least, though exactness here is out of question. The power of environment to shape humanity, irrespective of the 'necessity' for recapitulation, has not been taken into full account by the extreme advocates of the 'culture epoch' theory. And Nature seems even now endeavouring to make the 'recapitulation' less and less in the mental, as she has already done in the physical, world. The development in man of individuality and character to an extent unknown in the animal species beneath him is an important factor working to this end. Indeed, as the higher and more essentially human traits of a mental and moral order permit with increasing stability the formation of character and its utilisation in the evolutionary process, such recapitulation as now exists is bound, like the struggle for existence, to be profoundly modified, if not practically abolished. The child of to-day comes into contact with almost every epoch of the past history of his race, such is the constitution of the social classes of our great modern communities, and the variety and

complexity of their culture, and being culture-bearer himself, it is not absolutely necessary that he should be a nomad, a fisher, a hunter, a savage. Much of all these stages survives in the people about him, and by imitation he can acquire, perhaps, all that is really needed. Moreover, the progress of the individual, like that of the race, is never really in a straight line. The rhythmic phenomena, therefore, of individual and racial development are perhaps just as important as the recapitulory, and with these are associated the 'critical periods,' 'crises,' etc., of life. The parallelisms and interactions of physical and mental growth and activity, the periodicities of growth and rest, of action and reaction, productivity and receptivity, exaltation and depression, intellectual and bodily exercise, the variations, ebbings and flowings that seem to characterise every organ of the body and every activity and function of every organ, the seeming dualisms, oppositions, multiple personalities, the *détours* and divergencies due to cosmic influences and the ever-changing environment, the flashings of genius that alternate with dulness — all these, to say nothing of the multitude of like phenomena upon which the school impinges, might justify the opinion of those who declare that the child does repeat all that the race has experienced before him, but they will, doubtless, most of them at least, find other and more satisfactory explanations.

More and more, as we study the child, we perceive the truth of Landor's wise observation: 'In every child there are many children, but coming forth year after year, each somewhat like and somewhat varying.' And even in old age, the 'second childhood' of man, as it has been for centuries termed, there is something of this manifoldness and variety. All is not waste that is old, and a true 'second childhood,' possessing many of the best things of the first, can often be discerned in the 'green old age,' the oasis of the desert of *retour*. There is evolution amid involution, a parting glory like that of the setting sun. Nature, indeed, would appear to be busying herself with the creation between adult age and death of an epoch which shall be consciously advantageous to the race as the first childhood has been unconsciously. Some time, with the increase of health, peace and the essentially human social conditions, and the abolition of the destructive and degenerative factors of modern civilisation, enough of the energy, variety and manifoldness of the first childhood of the individual may

be preserved to re-create 'second childhood' and extend 'green old age' as beneficially and as advantageously to mankind as the prolongation of human infancy.

In our consideration of language, which has been called the first of human arts, we found that the development of the individual and that of the race seemed to coincide in many points of a general character. Sign language, the predecessor of spoken language, is of great importance both in the early history of the individual and in that of the race, for while with his voice man was able to imitate sounds in nature and the utterances of his fellow-beings, of animals, etc., the employment of gesture made it possible to 'imitate' and to indicate movement, form, place, size, direction, distance, action, and a variety of other things. Indeed, the very development of gesture as an art may have been the cause of the laggard growth of oral speech. The story of the child and the story of the race both seem to furnish proof of this. Noteworthy, amid what is perhaps a general resemblance of sign-language all over the globe, are the frequent divergences and dissimilarities in the signs used by primitive peoples of apparently equal grades of culture, together with the somewhat less remarkable differences between individual children, even in the same household. When primitive man and the child abandon gesture for spoken language, it is because the latter affords a means of expressing with less effort a greater number of new thoughts and feelings. A higher form of the same change is seen when the genius adopts a special form of language, such as poetry, for example, to express his thoughts and ideals.

With respect to onomatopœia, reduplication, use of vowels and consonants, word-invention, syntax, use of the parts of speech, order of words, compound words, sematology, name-giving, folk-lore of the word, etc., many parallel facts can be noted in the language of the savage and barbarian and that of the child. But here, again, there are great individual differences, and great differences between the various primitive races. With the child—the impinging upon him of the parental and family environment may account for it in part—both onomatopœia and reduplication (and the same thing may be said of not a few other linguistic peculiarities) are less of an art than they are with the savage, and form much less significant factors in the development of speech. With primitive man the genius

of the language of each tribe is permitted to exercise its influence upon the onomatopœic and reduplicative elements in the vocabulary, while with the child little opportunity for such action really occurs. The child is, early in life, furnished with so much that he can imitate, or reproduce in worn-down or attritional fashion, that he is not called upon to exert himself nearly as much as are the earliest possessors of savage or barbarous speech. The onomatopœic theory of the origin of human language gains much more evidence of its probability from the consideration of the speech of primitive peoples than from the study of the language of children. On the other hand, theories of the development of human language from an original speech of vowels or of certain consonants and vowels find more data to substantiate them in the language of children than in that of primitive peoples. Theories about the 'roots' of language really meet with little success from the consideration of either. The sentence-word of the child and the sentence-word of the American Indian are two very different things, and not a few languages of primitive peoples seem to show very few even general resemblances to child-speech. The interchanges existing between certain consonants appear to be a marked feature of many primitive tongues and of the language of very many children, while the vowels seem often much less significant with the latter than with the former. The great versatility of primitive races and of children in the learning of language (even 'clicks' do not present serious difficulties) is noted all over the globe, and there does not exist, apparently, any language which it is not possible for the children of any other people to acquire if the beginning is made soon enough.

The 'original' languages of children, of few of which even imperfect records are extant, offer a very interesting field for comparative research, and it is these instinct forms of speech, which at puberty often revive again, that may best be studied in relation to the primitive tongues of the race—these languages that are the child's speech and not *our* language, what he creates, not what we impose upon him. These original languages, as Mr Hale has shown, exhibit great individual differences—one resembling Malay, another Chinese, another Hebrew—in general constitution. Here, Mr Hale tells, lies the explanation of the diversity of human languages, originating in the perpetuation of linguistic variations due to the

language-instinct of children. There is much to be said in favour of this view that among savage peoples linguistic diversities are, to a large extent at least, the creations of children, which the over-indulgence of parents, their favour or their mental indolence, aids in perpetuating, and it has received the adherence of many distinguished authorities. Less important for comparative purposes are the so-called 'secret languages' of children, the great artificiality of which is often redeemed at rare intervals by an original word or linguistic contrivance which brings them into the range of primitive speech.

In word-meanings and the interpretation of words, the creation of new words on the spot, etc., the savage and the child often resemble one another very closely, as we have seen from the comparison of the vocabularies of children and those of primitive peoples. And both of them resemble in these respects the old dictionary-makers of our civilised races. The confusion of the name and the thing, the belief in the real existence of the word, etc., are common alike to the child, the savage, and the ignorant peasant, with all of whom often the object is correctly named in their own speech only, and a change of name really entails an alteration in the thing itself.

As to vocabulary, both the child and the savage have suffered from under-estimation. Careful investigations of the number of words in primitive speech and in the language of children, while revealing notable individual and tribal differences, have resulted in the overthrow of the views of Max Müller and other authorities, who assigned to the savage and the child vocabularies very much less in extent than they really possessed. The evidence on this point seems now indubitable. Those who emphasise the phenomena of involution in man have seen in the language of the insane, the mentally excited, those suffering from aphasia and kindred speech disturbances, in the progressive disappearance of speech in the individual, a parallel (inversely) with its development in the normal child. A parallel with the savage also has been instituted here. It must be said, however, that these 'inverse' parallels are hardly so well substantiated as are some of those concerning the normal growth and development of language in the child and the race.

Observation of the differences between oral and written speech (drawing is an early form of the latter) in the develop-

ment of the individual and of the race would seem to indicate that the former, which, apart from all other considerations, is in its varied forms (talking, crying, shouting, singing, etc.) a healthy exercise, should, in the home and in the school, be given a considerable development before the latter is attempted —the teaching of reading and writing being postponed to somewhere about the tenth year, when the physical and mental faculties of the individual are in a condition justifying the attempt to acquire the later art. The ear and tongue of the child, as was the case with the race, should be given a good deal of exercise and training before the serfdom of the eye and the hand to the alphabet, the copy-book and the dictionary begins. More than one language can readily be acquired by the child before reading and writing are entered upon, for there were polyglots among primitive peoples before any alphabet or hieroglyphic system had been born. These views are further emphasised by the fact of the difficulties besetting the child who is beginning to compose in writing, as the letters of high school pupils and their themes abundantly exemplify.

Music, in some form or other, is known to all the tribes of mankind, and, if we believe Major Powell, its growth in the individual is parallel with its growth in the race. From the dance, earliest of the æsthetic arts, was born the extension of rhythm; when poetry came melody was developed; from the necessities of the drama grew up harmony, while the revelations of scientific knowledge made harmony possible. Music itself was created 'when the rhythm of motion became the rhythm of emotion.' The characteristic dances of savage and barbarous peoples (not their later war-dances) are of a merry, rollicking sort and find their parallel in the ring-games and other dance-plays of the children of modern civilised parents, as Mr Newell, Mrs Gomme and others have shown. The refrains and songs connected with these games also reveal resemblances between the savage and the child. From nonsense-refrains both rise to the dignity of historical and epic verse—and the dance has become a poem. In singing, at labour in the fields, on historical occasions, at religious and other festivals, harmony grows out of the grouping of voices, and the dramatised myths of primitive peoples possess a sort of kinship with the song-games of children. Science gives the final touch by making possible numbers of

sweet instruments and the training of expert voices, and the simple, original time of the 'ring-around-a-rosy' becomes a symphony, and its accompaniment a sublime poem.

Not only is music common to all races of man, but in each particular race the individual must often be very idiotic not to evince at some time a liking for, an interest in, some sort of music. But among normal individuals, even in childhood, as among the human races, the differences in appreciation of and ability in music are often enormous, while the effects of the various sorts of music exhibit equally great racial and individual divergences. The power of music as a therapeutic method, as an aid to toil, and as a social factor, is noted among all peoples, and is especially marked with some of the 'lower' races and with many children. The effects of mood, season, character, temperament, etc., upon musical ability (racial and individual) ought to receive attention in modern musical education, which has so often, through the artificialities of reading music killed the older song-spirit. Here, as with language, the record of the tongue and the ear ought to come first. The child may very well retrace the history of the race here and be schooled by his own traditional games and the folk-songs whose music and whose poetic content lie so near the emotions of his own soul. Like music, something of a common æsthetic instinct seems to belong to all the human race. The child is one with the savage in picking up the pebble from the beach or the bright feather from the ground. The prevalence of the elementary forms of the chief æsthetic arts in childhood and early manhood is much greater than is commonly believed — rhyming, chanting, drawing, painting, story-telling, etc. So, too, with the 'mania for ornamentation,' from whatever cause it may have arisen; the race, like the negro boy, as Mr Bates observed, was once content to go barefoot but was 'suffering for a breast-pin,' or some other ornament. The æsthetic sense of some of the lowest races of man has been underestimated by most authorities, just as Perez has underestimated that of children. The love of flowers exhibited by some Polynesian and American Indian peoples is, indeed, very childlike. The ability of the child and of primitive man to judge the beauty of the human countenance has also been rated too low.

Between the earliest known art of man and the art of children many interesting resemblances have been noted by the

numerous authorities who, of late years, have studied this subject. Boccaccio, in the *Decameron*, makes Scalza compare the features of the Baronici, who 'were formed when Nature was in her infancy, and before she was perfect at her work,' to 'what children make when they first learn to draw,' and this comparison has been much elaborated since his day. In general, while the drawings of primitive peoples are often, by reason of the developed adult hand and the greater observation-gift, much better than those of civilised children, their modellings and sculptures are often by no means so superior. The child and the savage both err most frequently in the sense of proportion; the Kootenay Indian draws a mouse as big as a buffalo, a wolf as small as a cat, just as the child does, but with both the size of the material upon which the drawing is to be made, the nature of the drawing instrument and the customary idea of animal-character have sometimes to be taken into account. Some savages, also, like some children, seem miniature-minded, others gross-minded. In the art of savages there is often more 'art striving to be art,' while with children it is not so much a question of reproducing the man, animal, house, etc., artistically as it is of describing them as they remember them. Children, more than savages, are influenced by the accidents and incidents of the circumstances under which their drawing is executed. They will dot a horse all over to show that it was snowing, or continue to draw every horse for a week or more just as they saw it when first observed. The influence of civilised environment also creates a difference in the child as compared with the savage. The drawings of a hunter-race must inevitably differ in many respects from those of a child in one of our great cities. It may be, as Grosse holds, that the art of children is characteristically symbolic rather than natural, and that the tendency to caricature, while greater among savages than commonly thought to be the case, is less than among children in their epoch of productive and creative art. Children and primitive man possess in common a keen love for the portrayal of animals (life and motion especially attracting them), and agree also in a common neglect of plant-life. The child, especially, is in love with the human form; as Ricci says, he 'begins where God left off,' with the highest form in creation.

The great artistic skill of the men of the river-drift period in prehistoric France is due, no doubt, as Grosse holds, to 'the

partnership of observation-gift and manual dexterity.' So also at the period of the highest development of painting and sculpture in Italy, the great artists spent their apprenticeship in the workshops of goldsmiths and in other industries where manual dexterity was to be acquired. The mistake of education to-day lies in making manual training a fetish *per se*, instead of following the race-order and letting it naturally precede and prepare for the higher handicraft of the painter and sculptor. Just as the sexually-precocious individual really discounts beforehand all the pleasures and interests of manhood and womanhood, so the child, with course after course of manual training, dries up the springs whence later art may flow. With the children of primitive peoples there would seem to be somewhat more spontaneity in drawing and an earlier development, as compared with civilised children, but more evidence is needed on this point. The influence of material is very great with both the savage and the child, and the introduction of a new drawing material seems with both to produce an interregnum of baser art. Just as pottery bears upon its surface the proof of its origination from clay-lined wicker-work, so the drawings of certain animals by Indians reveal the fact that it is the spread-out skin of the creature and not the living being that is before their mind's-eye, and the free-hand drawings of school-children afford abundant evidence of the influence of the stick-laying, geometrically-controlled art of the kindergarten, trees, men, and everything else suffering from the angle, the triangle, square, etc. Both the savage and the child revel more in the freedom of the curved line with all its variations than in the diagrammatism of the straight line school, which appears to be despised alike by primitive and by the highest human genius. From scribble to eloquent picture both the child and the race progress, and many of the intermediary stages with both are almost indistinguishable as the confusion of primitive pictography with child-art shows. Children and savages resemble each other, again, in their 'illustrated stories,' for even some of the earliest products of art with prehistoric man appear to be intended for the same purpose as those which the child so often scatters through his themes and essays. Drawing, being the natural preparatory stage for writing, may be as misused like manual training, and the later chirographic and descriptive art be mined thereby; the geniuses of the nursery are practically extinguished

by the time the high school is reached, when the classic model finishes the killing process by again debasing the *naïveté*, spontaneity and real inspiration of child-art, all that is now left being 'a few clever ornamentalists,' and a host of disgusted youths and maidens, who will need to learn again how to be in love with art.

In considering the resemblances and differences between the child and the savage, we saw the difficulties involved in the theory that the child is 'a little compressed, synthetic picture of all the stages of man's evolution,' how sometimes the savage and the ignorant among our civilised communities seemed to stand together over against the child, while at other times, as surely, the child and the savage seemed intimately related, as opposed to all other groups of human kind. The variety in savagery is as great as the variety in childhood, and it is no more easy to know the child than to know the savage. Between certain unspoiled primitive peoples now existing and the child there is often discernible a parallel in those things which are best in the individual and the race—absolute trust, honesty, guilelessness, sympathy, comradeship, *naïveté*, intuitive genius, love of peace and play-activity, religiousness and many of the virtues that are more or less passive or quiescent; while, on the other hand, it is not difficult to find savage and barbarous peoples, equally primitive, apparently, who afford a parallel with what is most unlovely, ungraceful and uncomely in children—distrust, passion, misoneism, exaggerated unrest, pugnacity, lying, teasing and bullying, thieving and destructiveness. For those who believe in 'types' of character and individuality in children, the suggestion is inevitable here that such 'types' may exist among races also. We are yet without thoroughgoing studies of the 'lowest savages,' who, as Topinard says, 'differ in character, disposition and manners according to the more or less difficult conditions in which they are found, and according as they have more or less connection with other men'; and we lack, in like manner, thoroughgoing studies of children, who differ in the same way and for the same reasons.

The mind of the child and the mind of the savage, when differences due to the presence of manhood and womanhood in the latter, diversity of environment, influence of higher culture, prolonged infancy, social environment, etc., have been taken into consideration, present many interesting parallels of

a general sort. *Naïveté* that touches upon genius, suggestibility of great extent and sometimes of a very high order, resemblances in mental association, modes of thought and of thought-expression, dream-life, mind-content, imitation, conservatism, mythological ideas, personal and social ideals, sense-domination, love of analogy and symbolism, use and products of the imagination, love of nature and the world of plant and animal life, poetry and story-telling, myth-making, personification and other primal arts, language, art, music, etc. It must be remembered, however, that it is now the savage, now the child, who in one of these things touches the highest genius or sinks into the deepest ignorance—the capacity for mental progress and development rarely finding equal expression in both everywhere and at all times. All men, even the most highly civilised, have, as von den Steinen puts it, still much of the savage as an honourable possession in heart and brain, and exactly how much, and in what manner, the child is more savage than the adult is often quite a relative matter. In comparison with the child, the savage, who so often anticipates higher culture, higher morals, higher arts, suffers because we seem inevitably to rate ourselves higher and him lower than each really is.

The happier fortune of primitive peoples in the days when the first great civilisations were beginning to arise, and when race-questions could not be decided by reason of mere social taboo, suggest that the failure of more recent culture in dealing with the so-called 'lower' races has been largely one of method, and the same thing has to be said of the attempts of the 'higher' races at educating their children. Favourable conditions, social equality, interest and opportunity, personal influence, historic incident, have made 'higher' races out of savages, as they still make great men and geniuses out of apparently commonplace children. There is certainly a parallel between the rise of genius in the individual and its development in the race, but it has hitherto been but very imperfectly worked out.

There is abundant evidence to show that the children of primitive peoples, whatever the condition of adults may be, are quite as well endowed mentally as the children of civilised peoples, the great difference between them existing in the greater number of learnable things which the environment of the latter provides, and the care and trouble which the com-

munity takes to make the acquisition of these things possible. Not the minds so much as the schools of the two stages of human evolution differ. The much-discussed 'arrest of mental development,' which is thought to make so great a difference between the child and the adult among primitive peoples, can be paralleled in most civilised communities, although to a much less extent, and it would seem to indicate that the 'arrest' is not of such an irreversible kind as is believed by many authorities, not any less reversible than the well-known arrest of mental development in the individual, which is one of the marked accompaniments of the pubertal epoch. An exhaustive study of the pubertal epoch in the individual must throw some light upon the difference between the adult and the young savage, and explain some of the facts upon which the theory of 'arrest' is based. In general, the comparison of the adult savage with the child of civilised communities reveals the fact that, with the limitations discussed earlier in this volume, we may say that the savage is a child, the child a savage; but both of them much more, for Nature never quite repeats herself.

From the point of view that all crime is something, once judged indifferent or commendable, which mankind, with the enlightenment of progress, has now chosen to condemn, the child, who repeats in brief the history of the race, might be termed criminal. But when we consider the narrow margin which with adults still divides the good from the evil on the one hand, and on the other the remarkable absence of crime among many primitive peoples, and in addition the fact that the child is the race-bearing element *par excellence* of mankind, we must hesitate so to stigmatise him. Recent data seem more and more to strengthen the view that crime is the result of madness rather than of badness, while in the child it is largely the result of neither. We must eliminate also the question of degeneracy, for if anyone is degenerate it is rather the adult than the young. Crime is often a product of childhood without any real criminality on the part of the child. The limited range of juvenile crime—theft, destructive ness, assault—while offering a point of comparison with many savage and barbarous peoples, practically settles the matter of the criminality *per se* of the child. Heredity, environmental influences and stimuli, imitation, example, etc., make criminals of children, as they often do of adults, and opportunity is

even more powerful with the last than it is with either the child or the savage. If the criminal be a degenerate, and the child merely an undeveloped being, only a seeming parallel can exist between them here. Crime is no more inherent in the child than in the race; the child is not monstrous unless the race is.

The flecks of past racial sins may, perhaps, be detected in him, as in the genius, but that he is criminal because he is a child is as doubtful as it is that the genius is often near the lunatic or the physically decrepit because he is a genius. The 'faults' of the one, like those of the other, are incidents, not essentials. The child, too, is often made worse by having to grow to become an adult, for nature has by no means provided him with perfect society in the company of his parents, his immediate environment, the school, etc. Frequently, also, the child, like the savage, is passively bad only, as he is often, too, only passively good. He lacks the wisdom to make him honest rather than he possesses the instinct of theft. He kills because he is ignorant of what life and death are, rather than because he rejoices in depriving anything of life. He destroys through the impulse to make a change, to see things different, rather than from an instinct to wantonly annihilate. The variety of temperament, individuality and character which exists here can no more be neglected in childhood than in adult age. Each of us, it has been said, has a criminal asleep in his brain, and it is not always because one is a child that the evidence of his existence appears, or because one is an adult that he is repressed.

In the matter of crime, the child, in the natural course of evolution, ought to repeat the history of the race more passively, less actively, as civilisation advances, and the social environment assumes ever greater importance as *the* shaping factor of humanity. Nature is striving to 'make the punishment fit the crime' by gradually abolishing the latter—and the child is leading here, as elsewhere. To the child as yet all things are possible, good, bad and indifferent, but the healthier social life of mankind, more even than education, weights the scales for the good.

That the 'ascent of man' has not been accomplished without his body and his mind retaining in more or less rudimentary form many organs and characteristics which are now useless, and sometimes even harmful to him, in

his present condition, can hardly be doubted. It is nevertheless also true that many excrescences, pathological formations, and accidental resemblances have been set down as 'atavisms,' although they were merely the results of nutritional and other disturbances of the organism, and not traceable to any ancestor of man, who, did he possess them all, must have been a veritable monster. Variations due to the mechanical and other conditions involved in the evolutionary process itself, variations due to sex, age, temperament, character, individuality, variations produced by interferences with embryonic growth, and by the influences of the cosmic and social environment of man, need to be excluded before we can rightly understand the phenomena of 'atavism' or 'discontinuous heredity.'

There are physical atavisms such as those noted in the embryo and the young of man (the gill-slits and their train of effects) which carry us back to amphibian and piscine life, further back along which line the younger embryo in general goes, and there are physical peculiarities of the new-born child (the form of the nose, the use of the hand, etc.) which let us compare man with monkeys now existing. So marked are some of these resemblances that the term 'little monkey,' when we take into consideration the form, aspect, actions, movements, etc., of very young children, seems often not out of place when applied to them. The long ancestry of man makes it probable that other explanations will be found for some of the peculiarities in question than the atavistic ones now in vogue, especially as we do not yet know the exact lineage of the human species, nor have the phenomena attending the numerous rises in the animal scale, below the change from quadruped to biped, been as yet made clearly evident, while concerning the latter we are even yet largely ignorant. The question of degeneracy and abnormality complicates the matter, some authorities holding that every abnormality present in man finds its analogue in some condition previously existing in some creature lower in the scale than man (muscles, organs, bony orifices, joints, etc., especially). Very many 'atavisms' are of little or no importance or interest, but the pads on the palms of the hands and the soles of the feet of the human fœtus (the relics of the walking-pads of quadrupeds), which can still be discerned in the adult; the 'clinging power' of new-born infants (so monkey-like); the quadrupedal attitudes of the child before it can maintain the erect position; the

peculiarities of manual development, throwing, grasping, etc.; prehensility of the toes; inability of the human being generally to swim without learning (resulting from the long arboreal residence of his immediate animal ancestors); and the atavisms of action and movement are of very great interest and significance. The atavisms of the physiological and mental order, the so-called 'psychic atavisms' especially—the phenomena of the emotions, fear, anger, love present innumerable examples—are of particular importance in the new developments of education under the impetus of child-study. Vegetarian propensities, orchard-robbing, dirt-eating, biting, scratching, clawing and pulling, rolling and shuffling about—the thousand and one contortional activities of childhood—'teasing and bullying,' cruelty in children, juvenile crime, the games and plays of the young are all more or less atavistic, although too much has been attributed to atavism as a factor in the production of these peculiarities.

Many of the so-called atavistic organs and characteristics of man exist only in a 'reduced' or 'rudimentary' state, for the evolution of the human species has not progressed merely by the acquisition of new characters, but also by the loss of old ones. It would seem almost as if every new development was possible only through preparation for it by the abolition of some already existing peculiarities. The body of man and the body social abound in the relics of such disappearing characteristics, which are probably incapable of re-development, but may occasionally be used, when not too 'rudimentary,' as vents or safety-valves for the organism. That organs or characteristics, which have entirely disappeared, may reappear again is not beyond all possibility, although doubted by many authorities, except in cases of abnormality and degeneration. Regression and atrophy often open up the way for new organs, new functions, new ideas, and new ideals in man, and the 'piece of divinity in us' keeps evolution alive. The accommodation of man to the erect position, which is not yet perfectly accomplished, and the evolutionary effects of the human characters *per se* are creating new and important dispositions which are rendering both physical and mental atavisms of less and less importance, for Nature is very careful to preserve the really necessary and essential organs and characters of body and mind alike from too much atavism and too much degeneracy. Very many atavistic peculiarities never survive until manhood

and womanhood, while not a few others disappear even before the birth of the child, yet others being scarcely discernible even in the embryo. Many mental atavisms also fail to extend over more than the period of childhood or youth, and the prolongation of human infancy that has taken place in the course of the race's history does not appear to have exerted a very marked effect upon the increase of the atavistic phenomena of that period.

In 'metopism,' the persistence of the frontal suture, we have an example of what has been termed 'regression,' 'atavism,' 'abnormality,' etc., although, instead of being a mark of inferiority, it seems rather one of superiority. Children, woman, and a minority of individuals in the highest races, seem to point the way of evolution here. The human brain is still growing, and what has been termed a regression towards a piscine cranial characteristic is really the response made to this cerebral growth by the cranial cover, which has not yet settled into solid fixity. Nature is finding a way here by which the large-brained may comfortably survive and the development of the brain in the anterior portion of the skull, which the formation of the face has kept from attaining its full growth, proceed with as little hindrance as possible. Both in the individual and in the race, here as elsewhere, the bonus is bestowed upon higher intelligence, in so far as it is related to greater cerebral activity and growth. One might say that this single characteristic of 'metopism,' which the fœtus and the young child possess and which is now in process of transference to the adult and to the race, outweighs a hundred or more 'atavisms,' whose bearing upon the future of the race and of the individual is infinitesimal if not altogether *nil*. And there are other peculiarities also, not looked upon as regressions and atavisms, which may turn out, like 'metopism,' to be distinctly progressive phenomena of human evolution.

The juxtaposition of 'women and children' in folk lore and proverb, common to all quarters of the globe, and the doctrine of their parallelism in inferiority, upon which that juxta-position was based, do not any longer commend themselves to the scientific mind. Abundant evidence is now forthcoming that the child and woman (who, in the best racial sense, is nearest him physically and mentally) are the real bearers of evolution in the race. Not soulless, as some ancient theologians and some savage tribes have believed, but bearing the soul of the

race, woman, the surrogate of the child, has been shaping man physically and mentally in her image, as the man of genius (not the insane genius) and the typical urban adult (not the weakling or the degenerate) demonstrate in their somatic and psychic organism. The future humanity lies more in woman than in man, and the child is full of its prophecy.

There is no danger that Nature will permit woman to overstep herself and, degenerating, drag man along with her. She has been made like the child in order that he may be kept as far as possible like himself. When the 'parasitic forms' that hold her back have been cleared away and woman has been given 'space to burgeon out of all within in her,' the race will be nobler, purer, because, through her, it will have become more childlike in the highest sense of the term. The race will be at its best when woman is allowed to make the best of life. Many of the differences now existing between the sexes are accidental or incidental, the result of certain social systems, of the subjection of woman by man, and of her restraint in innumerable directions, but her 'share in primitive culture,' in the early arts and social institutions of mankind, affords abundant proof that she is in no sense 'inferior to man;' moreover, she possesses those childlike characters which the highest genius of the most intellectual races of mankind exhibits in all ages. Woman may indeed be said to have nursed her children, domesticated animals, and tamed man with equal skill and wisdom. Even amid the wild emotion of the sexual congress she has ruled the physically stronger by her wit and her humanity. Some have unchivalrously added that while busied with drawing man away from the ape and the brute she has not altogether eliminated the tiger from herself, and that in some respects she has proved a better leader than exemplar; the conduct of women towards their own sex has often furnished weapons for such arguments.

While childhood lasts, the general traits, both physical and psychic, of boys and girls differ less than is commonly supposed, and co-education in these early years has distinct advantages. So also has the employment, during this period, of woman as teacher, or of those men whom children themselves pick out for their resemblance to themselves, the few geniuses of pedagogy who are not women.

All over the world, race for race, women and children, to a certain extent, resemble each other; they are the most

generalised forms of the human species. Race-characteristics from one point of view are largely arrests of development, changes and peculiarities due to environment, exercise, activity, use and disuse of organs and functions, nutritional and other physiological or physical disturbances of the organism, which prevent the child from developing to the full along the lines of its generalities. The European (or American) white child, the most generalised form of the white race, may itself be looked upon as a very specialised form of the Mongoloid type, the childlike peculiarities of which, in adult age, are very numerous. The great possibilities of variation, somatically, which lie in the child make it probable that many of the peculiarities that occur along the road from blondism to brunettism, from dolichocephalism to brachycephalism, from short stature to high, etc., may be, not the products of race-intermixture, but the members of a normal series of variations from the original type. This is of great importance in respect to the connection thought to exist between physical and mental development both in the race and in the individual, even by those who do not agree with Cope's view that every physical peculiarity has corresponding to it some mental peculiarity, or that every bone in the body is repeated in terms of mind.

The child, in the helpless infancy of his first years, in his later activity of play, in his *naïveté* and genius, in his repetitions and recapitulations of the race's history, in his wonderful variety and manifoldness, in his atavisms and his prophecies, in his brutish and in his divine characteristics, is the evolutionary being of our species, he in whom the useless past tends to be suppressed and the beneficial future to be foretold. In a sense, he is all.

If the education of the centuries to come be cast in the spirit of wisdom, the child will not, as now, lose so much in becoming a man, the man or woman lose so much through having been a child, but the childlike elements necessary to the race's full development will persist to the greater glory of the individual and the perfection of mankind.

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INDEX

Abstraction, 334.
Adolescence in various animals, 7.
Æsthetics, primitive, 183; of children, 188.
Age changes, 100.
Alvarez, 73.
Analogy, love of, 321.
Anger, 270.
Animal compared to human infancy, 3.
Ape and infant, 29 *et seq.*
Appelius, 89.
Aschrott, 90.
Atavism, 219 *et seq.*; psychic, 254; alimentary, 255; dirt, 257; mimetic, 258; genital, 258; cruelty, 259; miscellaneous, 263.
Australian onomatopœia, 115.
Auto-erotism, 404.

Baker, F., 232
Barnes, E.. 88.
Barnes, M. S., 87.
Birth, man at, 1.
Body, in children and savages, sense of, 314.
Bolton, F. E., 224.
Bos, 61.
Buckman, S. S., 227.
Bull-roarer, 274.
Bullying, 262.
Burk, F. L., 262.

Camerer, 72.
Chrisman, O., 86, 136.
Christopher, W. S., 74.
Civilisation and food, 435.
Clicks, 131.
Clouston, 74.
Colour sense in infancy, 78.
Colozza's play theory, 14.
Compayré, 362.
Compound words, 145.
Corporal punishment, 388.
Counting, 316.
Criminal anthropology, 354 *et seq.*
Criminality in childhood, 89, 367.
Cruelty, 259.
Cry as origin of language, 119.
Culture-epoch theory, 56.
Curiosity, 344.
Cushing, 242.

Dancing, 181.
Degerando, 108.
Delaunay, G., 100.
Demolins, 64.
Dendro-psychoses, 228.
Dolls, 276.
Dress, atavism of, 280.
Dramatic art, 109.
Drawings of children, 190 *et seq.*, 453.

Education, by play, 17, and crime, 393.
Ellis, Havelock, on modesty, 281; on criminality in children, 361; on secondary sexual character, 398; on sexual inversion and auto-erotism, 404; on sexual differentiation, 417; on position of woman, 440.
Erect posture, 235.

Fears, 265 *et seq.*
Fickleness, 347.
Fishing, 279.
Fœtal attitude, 248.
Food and civilisation, 435.
Fritsch, 435.
Froebel's play theory, 13.

Games, of savages, 21; of children, 275.
Garbini, 77, 91.
Genital atavisms, 258.
Genius, 35, 40; its normality, 45.
Gestation periods in different animals, 3.
Gesture, 109, 110.
Giuffrida-Ruggeri, 83.
Groos's theory of play, 25.
Guibert, 81.
Gulick, L., 75.
Gutsmuths's play theory, 11.

Hale, 135, 137.
Hall, Stanley, on sense of self, 228; on fears, 266; on anger, 270; on children's lies, 382.
Hartwell, C.M., 75.
Hegel, 56.
Helplessness, ethical import of infantile, 4.
Herder, 55.
Hrdlicka, on art and literature in mentally abnormal, 157; on difference between white and negro children, 433; on defective children, 439.

Huart, 72.
Hunting, 279.
Hutchinson, Woods, 57.
Hydro-psychoses, 224.

Ideals of children, 312.
Idleness and crime, 369.
Imagination, development of, 83; in children, 324.
Incubation periods, 3.
Imitation, 306, 371.
Improvidence, 350.
Infancy in man and animals, duration of, 3; defective sense in, 77; colour sense in, 78.
Infant and ape, 29 *et seq.*
Insane as compared to child and savage, 157, 299.

Japanese onomatopes, 114.

Kiss, origin of, 259.
Kite-flying. 275.
Kline, L. W., 88.
Krauss, W. C., 75.
Kurella, 397.
Kussmaul, 93.

Lacassagne, 70.
Lesshaft, 80.
Lessing, 55.
Linguistic evolution, 93.
Lombroso, Cesare, 355.
Lombroso, Paola, on play, 17; on gesture language, 113; on misoneism, 327; on children's morals, 391.
Lukens, on origin of language, 123; on classification of children's words, 143; on art of childhood, 198.
Lying in children, 381 *et seq.*

Macdonald, A., 72.
Magic and art, 200.
Mantegazza, on emotional expression, 69; on gesture, 109; on psychic atavism, 254.
Married couples, resemblance between, 32.
Marro, 412.
Mason, O. T., 415.
Masturbation, 404.
Memory, 341.
Mental characters of savages, 296.
Metopic suture, 283.
Misoneism, 327, 365.
Modesty, 281.
Morals of children, 391.
Morgan's views, 57.
Morrison, W. D., 377.
Muscular anomalies, 235.
Music, origin of, 174; effects of, 197; primitive, 180; and children, 182; universality of, 452.
Mythology of children, 317.

Name-giving, 149 *et seq.*
Nature, feeling for, 327.
Negro children, 433.
Nipples, supernumerary, 400.

Olfactive sense in infancy, 77.
Onomatopœia, 113 *et seq.*
Originality, 349.
Ornamentation, 185.
Orophily, 320.

Passion, 347.
Pelvis, survivals in, 234.
Play, the meaning of, 10 *et seq.*
Posture, erect, 235; fœtal, 248; in childbirth, 249; in fatigue and excitement, 250.
Powell, J. W., 60.
Precocity, in intelligence, 38 *et seq.*; of genius, 42; sexual, 408.
Prehensile foot, 246.
Pronouns, 144.
Prostitution, 370.
Puberty, linguistic development at, 139; changes at, 411.
Punishment, corporal, 388.

Quantz, 228.

Races, children of lower, 34.
Reduplication, 124.
Religion in childhood, 86.
Ribot, 86.
Right-handedness, 241.
Robinson, Louis, 229, 231.
Rudimentary organs, 223.

Sanford, E. C., 67.
Savages, play among, 20.
Schiller's play theory, 10.
Scott, Colin, 103.
Secondary sexual characters, 397.
Secret languages, 136.
Sexual perversions, 402; inversion, 404; precocity, 408; sexual differences, in development, 409; in relation to civilisation, 417; list of chief, 418; in childhood, 423.
Sigismund, B., 92.
Sign language, 107, 111.
Skeuomorphism, 197.
Songs of children, 276.
Springer, 71.
Starbuck, E. D., 87.
Steinmetz, 379.
Story-telling, 345.
Suckling period, duration of, 5.
Suggestion, 305, 371.
Suicide, 379
Swimming, 252.
Symbolism, 322.

Taboo, 309.
Tarde, 306.
Teasing, 262.
Tigerstedt, 71.
Truancy, 88.
Turner, Sir W., 236.

Verrier, 70.
Viscera, survivals in, 234.
Vitali, 423.
Vocabulary, extent of, 160.
Vocal evolution, 91.
Vowel speech, 127.

Wallaschek, 180.
Weapons, 273.

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