The Data of Alienism. By CHARLES MERCIER, M.B. (Lond.), F.R.C.S.

III.

THE ORGANISM—THE PHYSIQUE.*—*Continued.*

The study of the Laws of Heredity, as conducted in the preceding papers, has resulted in a definite conclusion, it is true, but in a conclusion as to tendencies only; and whatever facts we may ascertain in the family history of a patient, however numerous and however damning they may be, they can never warrant us in inferring anything whatever with respect to that patient, beyond the existence of a tendency in one direction or another. To ascertain how far, and in what proportion, these tendencies, in so far as they concern the Structure of the Organism, have become actualities, recourse must be had to the study of the Physique, which is the outcome of the combinations, and conflicts of the laws of inheritance. Or, in other words, the Physique is the form which the organism has assumed under the action of the developmental forces.

The assumption of a certain form by an organism implies that development—the resultant of the developmental forces—has proceeded in a certain direction for a certain distance. It is obvious that if development had taken another direction, or proceeded further or not so far, the form of the organism would have been different; and it is obvious, moreover, that these two are the sole elements that determine the form of the organism. They therefore, form a natural basis, and indicate a natural division, of our investigations into the Physique. It

* It has been represented to me by several friendly critics that, whereas in the paper on the Nature of Insanity, I had promised to follow on with schemes for the investigation of Mind and Conduct, it has, in fact, been succeeded by papers on a totally different subject. To this impeachment I must plead guilty, and I have only to say in extenuation, that the promise referred to resulted from a very inadequate estimate of the magnitude and difficulty of the task. Further consideration convinced me that such schemes, involving, as they will, an entirely new departure in the science, would have a very frail chance of acceptance unless they were preceded by a preparatory treatment of the simpler aspects of the subject, so arranged as to lead up to the more difficult regions that lie beyond. Furthermore, closer examination showed that in the science of the normal Mind large gaps existed, and these defects in the foundation had first to be made good before any superstructure could be raised. The promised schemes are, however, in course of preparation, and a preliminary contribution to the first of them appears in the current number of "Mind."

https://doi.org/10.1192/bjp.29.125.31 Published online by Cambridge University Press

must be borne in mind, however, that to follow the process of development is no part of our task. All that we have here to do is to estimate its results, taking these results, for the sake of convenience, first in one aspect, and then in the other.

The direction in which development has proceeded determines those features, so preponderant in the structure of the organism, that characterise the Race, the Temperament, and, where it is present, the Diathesis; together with most of the still more special characters which are proper to the individual, and serve to distinguish him from others.

The height that development has reached is measured by Reversion to characters that have been lost by the majority of the race; by Survival in a well-marked form of characters out of which the race is in process of emerging; by Persistence to adult age of characters proper to embryonic life, infancy, or childhood; and by the degree in which those characters are assumed that appear at the highest tide of development.

THE RACE AND NATIONALITY.—Few better instances could be given of the fact, so frequently occurring and so persistently ignored, that speculative questions of apparently the most visionary character unexpectedly turn out to have a close and powerful bearing upon practice, than this question of Race considered in connection with Insanity. In the treatment of the insane, the one question whose importance transcends all others to an immeasurable degree, is the use or non-use of restraint; and during the past year, the use of restraint has been justified by an American alienist, on the ground that the type of insanity that occurs among those of American race is so different from that occurring among the English, as to necessitate a radically different mode of treatment. Alienists on this side of the Atlantic would approach such a question in a very sceptical attitude, but the fact that it has been raised shows the necessity for some reference to race among the data of alienism; and, should it be affirmatively established, it will necessitate the estimation of racial influence in every case of insanity that we have to treat.

The estimation of Race and of Nation, while they are, for the sake of brevity and convenience, grouped together, are yet in reality distinct problems. Every modern civilised nation has been formed by the amalgamation, at various times and in various proportions, of many distinct races; and the same race may not only have been so distributed as to become a factor in the composition of several distinct nations, widely different in locality and character; but, when it remains pure, it may

become so modified as to present a widely different physique, as we find in the Scotch and Irish Celts. The modern English nation is made up of grafts, more or less extensive, from almost every race of the Aryan stock; and most of these grafts have become so intimately blended together, that their distinctive traits can be recognised, if at all, only as contributing some modification to the general result. The first inhabitants of these islands of whom we have any written record were Celts, but who shall say how many waves of immigration had poured into this country between the times of the cave-dwellers in the age of Stone, and those of our earliest historical ancestors? or who shall determine how much of the blood of those humble chippers of flint runs in the veins of our statesmen and philosophers? This much, at least, is known, that for two thousand years, that irresistible march of Aryan man towards the setting sun, which has continued throughout an immeasurable past in the Old World, and which still continues in full vigour in the New, has maintained an influx of new blood into this country, at first in isolated waves of conquest, and ever since in a steady flow of peaceful immigration, that more than justifies the dictum of Defoe:—

> A true-born Englishman's a contradiction,
> In speech an irony, in fact a fiction.

That these heterogeneous elements have become to some extent fused into uniformity of character, is shown by the fact that among foreigners, even so closely allied to us as the Germans and French, an Englishman can usually be distinguished by his facial characters alone; but that the fusion is but partial and incomplete, is indicated by the ease and certainty with which various types of the original races can still be distinguished within the nation. Thus, from the west of Ireland, from the mountains of Wales, and from the Highlands of Scotland we get Celts of pure descent, though of divergent types, all of whom retain, in a marked degree, the mental and social peculiarities, and some of the physical characteristics, that distinguished their earliest historical ancestors. In the rural districts of East Anglia we find people who are not only peculiar in physique and dialect, but who bear in many instances the very names that were borne by their Anglian forefathers long before the Heptarchy; and the Jews we have always with us. Besides these scattered remnants of the component races, there are other distinctions which mark off sections of our population—distinctions that are partly vestigial

of the component races, but to a large extent have originated within the nation and in the historical era. It is manifest that in pre-railway times, when the population, and especially the rural population, was of necessity very stationary, and migration to any important extent was unknown, the inhabitants of any one district must have been for generations subject to a uniform set of environmental conditions, and must for generations have intermarried. In this way there must have occurred in each secluded district, a gradual assimilation of the inhabitants of this district to one another, and a gradual differentiation of them from the inhabitants of surrounding districts; and thus would be established a distinct sub-variety of man, which would only need a continuance of the favouring conditions to develop into a distinct variety and race. That the first part of this process has actually taken place is strongly indicated by the evidence of language. In tracing the history of the races of man, no evidence is so much relied on, or regarded as less impeachable, than that of language; and if this evidence is reliable as a proof of kinship, equally reliable is it as an indication of divergence. Moreover, as it is trustworthy in quality, so in quantity it is abundant. The dialect of Lancashire is almost unintelligible to a Londoner; to a Kentish peasant it would be quite unintelligible. The Yorkshire dialect, while allied to that of Lancashire, is not the same. In East Anglia not only are the vowel sounds different from the common, not only is there a copious vocabulary of local terms, but there is a cadence rising at the end of the sentence which is different from the Scotch cadence, and is unknown elsewhere. The Midlands have their own dialect. In Dorset and Devon not only is the dialect widely different from pure English, but small localities have their peculiarities of pronunciation, by which the natives can recognise the district, and even the village, from which the speaker comes.

Hence it appears, that while it would be indeed an idle task to attempt in this country, and at this stage in the history of the world, to disentangle the racial kinship of any individual belonging to the bulk of our population, and especially of our urban population; yet not very unfrequently we are called upon to treat an individual of presumably or ascertainably pure race, and in such a case it would be folly to neglect any indication of his mental and ethical tendencies.* The bearing of racial

* The formation of local sub-varieties of man, to which reference has been made, when collocated with the conclusions deduced in the last paper from the second law of Inheritance, yield instructive results. One effect of that

https://doi.org/10.1192/bjp.29.125.31 Published online by Cambridge University Press

considerations upon practice, has already been illustrated by the plea of American alienists for the use of restraint, and other examples readily suggest themselves. Thus, the turbulent and pugnacious spirit of the Irish Celt, which exhibits itself so constantly in their history, which impels such a disproportionately large number of them to enter the army, which appears in their passion for litigation, and which has been so prominently displayed on a large scale in the last few years in political movements, materially helps us to understand why they are among the noisiest and most violent of the inmates of our asylums; and their hereditary aversion to continuous employment, emerging into greater prominence and strength in insanity, as underlying racial qualities are prone to do, deprives us of our chief remedial agent, and necessarily renders prognosis less favourable in them.

THE TEMPERAMENT.—In the ease and certainty with which a foreigner in a country is recognised as such by his aspect only, we see how conspicuous and how constant are the uniformities of structure that depend on racial and national kinship; and in the ease with which each member of a race is identified from the rest, we see the immense diversity that exists superficial to the national resemblance. Thus it appears that there are, in the characters distinctive of a race, certain underlying uniformities of structure that remain constant throughout all the individuals of that race, and show through the wide diversity that exists in more superficial characters. Similarly, in the features in which the members of a family resemble one another, there is a smaller group of uniformities of structure of a less fundamental character, which exist throughout that family, and yet leave a sufficient amount of difference to enable the several members to be identified from one another. The similarity in the latter case rises to a higher level, and submerges many of the differences that exist between the several families in a race. In both cases, however, the similarities follow approximately the lines of kin-

almost sudden spread of railways over the country that took place 40 years ago, has been to cause a flux of the whole population, that must have tended powerfully to break up all such circumscribed groups; and the free intermarriage of the different local sub-varieties will, if those conclusions are correct, have tended to the production of a generation of higher average intelligence and more prone to insanity. That the general standard of intelligence is higher than it was 40 years ago, I think everyone will admit; and the evidence of an increase in the proportionate amount of insanity is so strong, that frequent efforts are made to explain it away. Without attributing too much importance to the influence of crossing in producing these results, I think it may fairly be considered a contributory cause.

ship, and, like a fluid between two surfaces, rise to higher levels as these become closer. But there is a third and a fourth set of uniformities that, while yielding to a certain extent to the influence of race and family, are yet largely independent of them; and often appearing sporadically in individuals scattered here and there, connect them together, by well marked similarities of configuration and function, into groups that intersect in an irregular and seemingly erratic way the groups formed by blood relationship. These are the characters which form the Temperament and Diathesis. Underlying and leaving unaffected the differences by which individuals, families, and races are distinguished, the characters of Temperament yet give rise to resemblances so well marked and so important, that we are enabled by means of them to group together at a glance men of different nations even, according to the Temperament they exhibit; and on the other hand to trace clear distinctions between individuals of the same family. Regard being had to the minor laws of inheritance, to the influence of reversion and prepotence, the fact that members of the same family should exhibit wide differences of Temperament is in no way remarkable; but the converse fact—the persistent reappearance in their pure form of certain definite types of structure and function, is at first sight unaccountable, and merits far more attention than it has yet received. In spite of the intermixture of parental qualities in offspring—an intermixture that must become more intimate in each successive generation, and must continually tend to reduce original diversities to a uniform average;—in spite of this powerful levelling influence, there still recur the same special groups of structural and functional qualities;—groups so peculiar that one can identify them with ease, and record the identification in a name—and these named groups of characters do not run in one family or one race—have no continuity of succession, but crop out here and there, so that the same type of frame, face, feature, disposition, and mind shall be found in individuals who are virtually unrelated to each other—individuals belonging to different nations, peoples, and languages, and whose lives are divided, it may be, by hundreds of years.

Although the consideration of the Temperament falls within the province of the Biologist rather than that of the Alienist, yet, as it affords an important datum to the latter, and as it has, during the present generation, attracted a surprisingly small amount of attention, a certain space may be fairly devoted to it here.

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As commonly enumerated by the older writers, the Temperaments which are the most clearly distinguishable, and, with their combinations or transition forms, the most widely prevalent, are the Sanguineous, the Nervous, and the Lymphatic. To these I would add a fourth, which, as it is the physiological counterpart of the Fibroid Diathesis of Dr. Sutton, I would call the Fibrous Temperament.

Persons of Sanguineous Temperament are of variable stature, but even when tall are rather slight than bulky; their bones are slight, and their extremities small. They are of fair complexion, the hair being usually light in colour, and, though often dark, rarely black, and is fine, luxuriant, and curly. The nails are long and convex in both directions. The skin is thin, delicate and fair. The head is small and round, the face oval in contour, and the features refined. The forehead is narrow, and in the best forms high; the brows are arched; eyes large (in the conventional sense), and the sight is often short. The nose is straight and rather short, not thin. The mouth is small, and the lips full. The upper lip, by which is meant the space from the nose to the mouth, is of medium length, and is concave; similarly the lower lip, from the chin to the mouth, is of moderate length, and is yet more deeply concave. Thus the red margins of the lips are well everted, and, viewed from the front, their outline is strongly curved—the *cupidon* lip. The jaws are small and the teeth large, so that in the inferior forms the latter often overlap one another. The chin is rounded. Persons of this temperament are very active; their movements are rapid, neat, precise, graceful, easily evoked; but they are wanting in force. They have great energy, and work with persistence, but they lack endurance; they are soon fatigued. Consonantly with this, they are readily influenced by their surroundings; easily susceptible to the influence of alcohol. Usually of a buoyant disposition, they are easily excited, elated and depressed; sensitive to the opinion of others. They are enthusiastic; feel keenly, but not very lastingly; and feeling finds ready and forcible expression, but is less apt to permanently influence conduct. They have bad memories; are highly imaginative; in thought ready, prone to abstraction and generalisation; in the best forms original in a high degree; often witty and subtle, but rarely complex. In youth they are precocious; they age early, and, as they grow old, they are apt to get bald, stout, florid, and often lethargic; but their small features and florid complexions often give them a boyish look in middle age. This is pre-

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eminently the poetic temperament; conspicuous examples of its highest development being seen in Shakespere, Byron, Shelley, and Mozart.

The Fibrous Temperament differs widely from the preceding. In it the bony frame is large; the stature is variable, but the frame is always bulky. The extremities, too, are large; the hair is coarse and thick; the nails flat, and often short. The head is large and massive. The face is square or oblong in contour, and the features large. The forehead is rather broad than high, though often both; the brows are thick and horizontal or inclined outward and upward; the eyes of medium size and often deep set. The nose is, in the best forms, long and aquiline, and often thicker and more prominent at the bridge. In inferior forms it has the shape which is called in women *retroussée* or tip-tilted, in men pug or snub. The upper lip is long, often very long, straight and vertical. In exaggerated forms it is convex, but in the type it is straight. Similarly, the lower lip, from the chin to the lower margin of the mouth, is long and straight, with, it may be, a slight concavity at the upper part. The red margin of the lips is thin and little everted. Viewed from the front the mouth is wide, and its curves but slightly pronounced. The lines leading down from its corners appear early in life. The jaw is square and massive, the teeth regular and enduring. In old age they may be seen worn down to mere stumps, but without a trace of decay. The voice is loud, and often harsh. Such men are active, but their activity is of a special kind. Their movements are not rapid; are often clumsy, and wanting in precision; but they are powerful. They are capable of immense exertion; they have great endurance of fatigue and privation; they work arduously and long, with little rest. They are very tenacious, and, once attracted by an object, will devote a disproportionate amount of time and trouble to it rather than relinquish the pursuit. They are but little influenced by their surroundings; bear with equanimity terrible responsibilities; alcohol has little effect upon them. Their emotions are not easily stirred, but they feel deeply and lastingly. They are undemonstrative, are little given to the expression of feeling, but exhibit its influence in permanent alteration of conduct. Hence they are of equable temper, seldom excited. They have great force of character and strength of will. In intellect they are essentially inductive. They have good memories; they revel in complexity of thought; are not given to generalize—are apt to look askance

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at generalizations; abhor abstractions, and love to grapple with the concrete affairs of life. They live long, and are but little subject to disease; maintain their activity to the end of life; they are late in growing grey, but they soon become wrinkled, and their skin falls into deep folds below the eyes and around the mouth. To such men fall the prizes of life. They are the men of action, the successful men. Excellent examples of this temperament may be seen among the foremost men in every walk of life—at the head of great houses of business, managers of railways, successful generals, prominent statesmen, dignitaries of the Church, leading financiers, and perhaps the purest examples have been seen on the judicial bench and the woolsack.

Persons of Nervous Temperament are often of small stature, and as a rule of dark complexion, sallow skin, and spare habit. The head is rather small, long and narrow. The forehead narrow and often low. The eyes are deeply set, the nose long, thin, sharply cut, aquiline and pointed. The upper lip is short, in well marked forms extremely short; the mouth is small, the red margin of the lips is thin, and but slightly curved. The angle of the jaw is oblique, and the chin pointed. The teeth are good, but small, so that there are often spaces between them. In habits they are restlessly active; they are apt to disturb those around them by their eager and incessant activity, an activity which does not readily tire, but displays itself more in rapidity than in force of movement. They display intense eagerness in pursuit, but they turn their pursuit from one object to another with startling suddenness. This quality, which displays itself in the lower forms as fickleness, becomes, in the higher forms, versatility. They have little patience—little persistence, but they possess great nimbleness both of body and mind. They are greatly influenced by their surroundings, and the effect passes away rapidly as the circumstances alter. They easily identify themselves with the ideas and feelings of other people, and thus, in passing from the influence of one person or group of persons to that of another, they may appear in totally different characters; but not on that account are they untruthful; the state of mind is genuine while it lasts. Their feelings are intense but transient, are expressed with strong, emphatic, and even exaggerated demonstration, but have little permanent influence on conduct. In thought they are quick. Ready of apprehension, they readily acquire knowledge, and readily forget. They have little initiative force, little power of impressing

their will on other people, and often live under the domination of some stronger mind. Like fire, they are good servants and bad masters. Dryden's description of the Duke of Buckingham is, as far as conduct is concerned, the picture of a man of Nervous Temperament.

The Lymphatic Temperament, which is rare in the pure form, and may be regarded as a variety of the Sanguineous, is in many respects antithetical to the preceding. In persons of this Temperament the bones are small, but the habit is bulky. The complexion is fair—often very fair—and the hair light, fine, and luxurious, but soon lost. The head is round and small; the features are like those of the Sanguineous Temperament, but the face is a shorter oval, and as life advances becomes pear-shaped from the increase of the jowl. The skin is pasty, the limbs large, and there is a tendency to fat. The movements are sluggish and have little force, but there may be much passive endurance. Surroundings are slow to influence persons of this temperament. Feelings are of moderate intensity, but very enduring, and largely influence conduct. Their expression is slow and slight. The mind is slow to apprehend, but tenacious to retain; thought is rarely either complex or profound. Since lymphatic persons rarely rise into prominence it is not easy to find a good example among well-known men. The character of old Joe Willett, in "Barnaby Rudge," is a caricature of the type. Ethelred the Unready was doubtless of this Temperament, and George III. certainly was so.

While pure, or nearly pure, Temperaments answering to the above descriptions are, save the last, far from uncommon, it is nevertheless undoubtedly true that the majority of human beings exhibit characters intermediate between some two or more of them; but since the mental qualities and the forms of conduct appear to be present in proportions generally corresponding with those of the facial characters, the study of temperament is not less helpful in these mixed forms than in the pure types; and with temperaments as with races, the best individuals are often the results of a cross. Thus the greatest men of action have been those in whom a strong Fibrous Temperament was dashed with a tinge of the Nervous. Such men were Julius Cæsar and Napoleon Bonaparte.

To what forms of insanity are prone those who exhibit the several Temperaments, is a question which is certainly very interesting, but which, so far as I know, has never been investigated. As far as my own observations go—and, having regard to their limited number, I would not attach much im-

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portance to them—general paralytics are very often of Fibrous Temperament; melancholiacs but rarely. On the other hand mania is common among them all. The Nervous Temperament not unfrequently becomes exaggerated into mania, and the Lymphatic Temperament easily subsides into dementia. Acute delirious mania rarely occurs in those of Fibroid Temperament.

When we inquire into the significance of the Temperaments, we are confronted with two distinct problems. We have first to explain how it is that like qualities appear sporadically in unrelated individuals; and secondly, we have to explain how it is that qualities which have no discernible bond of union with one another, appear together, and are together absent, with a frequency which forbids us to suppose that their connexion is accidental. Although these are, both of them, problems in biology, and an exhaustive treatment of them is not required here, yet since they nearly concern the alienist in other connexions besides this one, it will not be out of place to show that there are, in the region of biology, many similar facts, which, if they do not explain these occurrences, show in what direction an explanation is to be sought.

The appearance of similar characters in individuals between whom there is, in respect to that character, no blood relationship, is a frequent occurrence; and many of the qualities so appearing are of a far more striking and exceptional character, and occur in individuals very far more distant of kin, than any instance of temperament can show. In the human race, hare-lip, cleft palate, deaf mutism, and supernumerary fingers, appear in this sporadic manner; and if we include, as we are bound to do, lower organisms in our survey, the instances become embarrassingly numerous. A small but notorious instance is presented by the similarity in marking and colouring between the zebra and the tiger. Although these two animals have a common ancestry with respect to the main features of vertebrate and mammalian structure, yet, with respect to marking and colouring, there is no such blood relationship. Neither is there any common circumstance in the habitat or mode of life to which the similarity could be attributed. And if the characters are referred, as probably they may be correctly referred, to sexual selection, the difficulty is but postponed for a single stage; for we then have to account for the similarity of taste, and of nervous organization underlying taste, which leads two animals so diverse to prefer characters so similar. A general white colour, with dark tips to the ears and dark feet, characterises certain breeds of rabbits and certain breeds of cattle.

When dogs are in colour black and tan, the colours often have a precisely similar distribution in widely different breeds. In several distinct breeds of fowls, and also in pigeons, there occur varieties having feathered legs. The remarkable modification of feather known as "frizzling" occurs independently in fowls and in pigeons. Albinism is a striking instance of this class of occurrences. Like the temperaments, it appears sporadically in the most erratic manner, and without assignable cause. It appears in identical form in widely different orders and even classes of animals; among birds as well as among mammals. Like the temperaments, it is sometimes hereditary. Like them its physical peculiarities are accompanied by peculiarities of mind and of conduct equally distinctive and constant. Like them, it is not the expression of any direct conformity to environmental circumstances. A still more striking example is seen in the well-known modification of structure that is seen in bull-dogs. The short and broad forehead, the prominent eyes, the upturned jaws, the retracted lip, the protruding under jaw, the wide nostrils, the short and bowed fore legs, all appear in almost identical form in the pug dog. In this case it may be said, although there does not appear to be any evidence on the point, but it may be plausibly advanced, that the similarity is due to direct descent or close collateral relationship. But what are we to say of a breed of cattle—the niata cattle of La Plata—which exhibit a closely similar modification of structure? In these cattle the forehead is described as short and broad, the eyes project outward, both jaws are strongly curved upward, the lower jaw projects beyond the upper, the upper lip is much drawn back, exposing the teeth, and the nostrils are wide apart. This variation of form appeared suddenly *de novo,* in historic times—certainly since the 16th century. A similar conformation existed, however, in the Sivatherium, a ruminant which existed in India, and was extinct long before the niata breed appeared. The characters of the improved breeds of pigs are alterations in the same direction, and, more remarkable still, an essentially similar conformation of head marks off a variety of the common cod, which is called by fishermen the bull-dog cod. I have also had under care a patient who exhibited such a markedly similar conformation of jaws and lips, such prominent eyes and wide nostrils, as to gain the nickname of "the bull-dog."

In the vegetable kingdom analogous occurrences are found to obtain. Thus, six or more varieties of the peach have at different times, and in different countries, produced nectarine

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fruit; and each of the varieties of nectarine so produced have undergone parallel variations. Several varieties of cherries, of similarly distinct relationship, have produced fruit of the same new shape and ripening at the same new period. The dark colour that gives its name to the copper beech appears occasionally in the leaves of other trees, as the hazel and the barberry. The weeping habit breaks out with apparent caprice alike in the willow, the birch, the ash, the elm, the yew, the peach, the oak, and the thorn. Many more facts could be cited, but these are enough to show how often like qualities occur in organisms, that in respect to those qualities have no kinship.

The instances of the tendency of characters to appear in groups when they appear at all, and, for the characters thus grouped to undergo concomitant variation, are even more abundant. In some cases we can trace an obscure connection between the different qualities that vary concomitantly, but in others no discernible community of origin exists. That in cats, white fur and blue eyes almost invariably co-exist with deafness; and that, in certain cases, Mr. Darwin has noticed the deafness to subside concomitantly with the occurrence of a change of colour in the eyes, is, if not explainable, yet dimly intelligible, when we remember that the skin and the special sense organs are developed from the same layer of the blastoderm. Similarly, the inactivity and low intelligence so frequently seen in albinoes remind us that the brain has its origin in an involution of the external layer which forms the skin; and suggest that an error occurring very early in development may easily affect both; but in other groups of characters we can trace no such connecting links. Thus hare-lip and cleft palate comparatively often co-exist, not only with one another, which is explicable, but with supernumerary fingers, and with bifid uterus, which is inexplicable. That albinism in peafowl should always be accompanied by diminished size, might be looked on as a part or an additional manifestation of the defect in the organisation, were it not that other albino animals, *e.g.*, moles, are larger than the common kind. That the largest terrestrial mammals, the largest birds, and the largest insects are vegetable feeders, may perhaps be accounted for by the less concentrated food requiring a more bulky digestive system, and this again necessitating a larger frame; and that all horned mammals are vegetable feeders may be explained by the possibility of a descent from a common ancestor; but what explanation can we give of the fact that the large

vegetable feeders, solely among mammals and birds, and by far the most copiously among insects, are decorated with horns on and about the head? In fowls, frizzled feathers and a black periosteum always occur together. In man, disease of the suprarenal capsules and bronzing of the skin occur together. When, in any breed of animals, a variation occurs in the length of the legs, a concomitant variation occurs in the length of the head. Thus horses, dogs, pigs, rabbits, and pigeons that have long legs have also long heads, and *vice-versâ*. The most remarkable, and, perhaps from our point of view, the most important of these concomitant variations occurs in regard to colour. If a black and tan dog has a tan patch over the eye its feet are tan coloured. If a cat has white feet the front of the neck or chest is white. In addition to this correlation in colour of part with part, there is a most important correlation of colour with fundamental properties of constitution, which has been established unmistakably in pigs, horses, cattle, and sheep. Thus there is in Virginia a certain root which is poisonous to all pigs save those of a black colour, and these eat it with impunity, so that no pigs of any other colour are reared in that region. Another plant, in Sicily, is poisonous to white sheep, and to them alone. Horses of various colours, after eating mildewed and honeydewed vetches, have had every spot of skin bearing white hairs inflamed, the coloured parts being unaffected; and those horses which had no white about them escaped entirely. Mr. Darwin, from whose account most of the above facts are taken, gives many other remarkable instances.

These examples, to which very many more could be added, are enough to show that, when qualities exist in an organism, they often exist in groups, and are correlated to one another in a way at present inexplicable.

Hence it appears that the sporadic appearance of similar temperaments in unrelated individuals is but one instance of an occurrence which is frequent in all classes of organisms; and that the appearance in this manner of the large groups of correlated qualities which go to make up a temperament, and which have no descernible community of origin, is similarly of frequent occurrence.

The explanation of these occurrences, which is doubtless to be sought in that part of the process of Evolution which exhibits itself as Segregation, is a task for the biologist; it is enough for our purpose to show that no objection need be felt to the admission of the Temperaments among the data of alienism on

https://doi.org/10.1192/bjp.29.125.31 Published online by Cambridge University Press

the score of their want of consonance with other natural phenomena.

DIATHESIS. Whereas by Temperament we understand a peculiarity of configuration, associated with certain qualities of mind and certain tendencies in conduct; by Diathesis is meant a peculiarity of tissue, which gives a bias to all the vital processes, and especially to the process of inflammation, such that this latter process tends to take a certain form and to end in a certain way. Doubtless many of the distinguishing characters of temperament depend on pecularities of tissue; and doubtless, also, some of the diatheses, *e.g.*, the Strumous, appear to be exaggerations of the quality of tissue that obtains in a certain temperament; and thus the distinction is not absolute. Nevertheless, it is broadly enough marked to be of much practical value. Being a peculiarity of tissue, the diathesis is, of course, a matter entirely within the province of the physician, and does not require a detailed consideration at the hands of the alienist; but a brief enumeration of the various forms will be of service. The accepted type of diathesis is that of Struma, which may to some extent be considered the morbid counterpart of the sanguineous temperament, since it exhibits an exaggeration of many of the peculiarities of tissue which that temperament displays. In the Strumous Diathesis the bias given to inflammation shows itself mainly in early life, and is in the direction of persistence, chronicity, and caseous change. In the Fibroid Diathesis, the bias, which does not come into prominence until middle life, is toward slow changes of tissue and an increase of the connective tissue element in the parenchyma of organs, forming in this case granular kidney, in that, fibroid phthisis, and, in another, sclerosis of brain or cord. Allied to this is the Gouty Diathesis, in which the bias of inflammation is toward the deposition of urates in the tissues; and the next Diathesis—the Rheumatic—sometimes included with the last under the head of the Arthritic Diathesis, is characterised by the tendency of inflammation to affect the joints and fasciæ, with the accompaniment of great pain, and to subside without suppuration. The Dartrous and Leprous Diatheses are marked by the peculiarity of the skin affections to which they are prone; and the Syphilitic and Cancerous Diatheses require no comment.

PERSISTENCE, SURVIVAL, AND REVERSION.—The determination of the Diathesis concludes the consideration of those qualities which indicate the direction taken by the development. The characters indicative of the height of development

reached, being for the most part matters of degree, are necessarily somewhat vaguely defined, and do not permit of precise limitation. Nevertheless, from a general survey of his physique, we can form an approximate estimate of the grade of organization reached by an individual, and thus obtain an important help in determining whether it corresponds with the grade of environment that he occupies. If we find that the vestiges of his remoter origin are few and slight, and that those characters which mark the highest development of his race are in him well displayed, we may at once eliminate from the consideration of his case a whole class of possible defects.

Since the successive stages of development passed through by the individual embryo are reproductions of the stages passed through by the race in its corporate history, it follows that the persistence of an embryonic state is the appearance of an ancestral state; and that Persistence, Survival, and Reversion are so closely allied that doubt may often exist as to which category a given defect belongs to. Nevertheless, since the ancestral characters are assumed by the embryo in a modified form—since although it always roughly resembles the adult form of some ancestor, the resemblance is never complete—never more than an outline sketch—it follows that characters due to persistence are usually distinguishable enough from those which indicate reversion to justify a separate record. In Persistence some part of the process of development has stopped short, while the rest has gone on to completion; and in so far as this part of the process is concerned the adult organism remains as it was in the normal embryo. But in Reversion, a portion of the process shunts off the main line of development, and runs for some distance up an old and disused track; so that, in so far as that part is concerned, the adult organism possesses a character which is never assumed by the normal embryo, but which resembles an adult ancestral form to a degree which varies with the extent to which devolopment has proceeded along the obsolete track. Reversions are the still-adhering tatters of a cast-off slough. While, therefore, the immature condition which results from a stoppage of the process of development may properly be termed Rudimentary, the reversion to an ancestral condition, which results from the development to a more complete stage of some character commonly evanescent, is not properly rudimentary, but should be termed Vestigial, a term which will include also cases of Survival. While rudiments and vestiges have a different significance, and should be distinguished in thought, yet since the distinction is

not always possible, it is better, as a matter of practical convenience, to consider them together.

In *General Configuration* the infant resembles the anthropoid apes, and differs from the adult in the following respects. The body, and especially the abdomen, are of disproportionately large size compared with the limbs. The arms are long, and the legs are short and bowed. The length of limb below the knee is conspicuously deficient. In the ideal human form, as exhibited in the best sculptures, both of ancient Greece and Egypt, and of modern days, the body is divisible into three portions of equal length by two horizontal lines, one touching the upper margin of the patella, the other at the level of the umbilicus. In the infant, on the other hand, the umbilicus is in the middle of the length of the body, and in some anthropoid apes it is even below. When, therefore, we find associated together a large body, short neck, pot belly, short bowed legs, long arms, short thumbs and short great toes, we may fairly say that the individual who exhibits this configuration is of low type, and we may begin our researches into his mental qualities at a low level.

The size of the extremities should be noted for this reason, that smallness of hands and feet means a comparatively prolonged relinquishment of manual labour in the immediate ancestry. It signifies, therefore, a comparative absence of dealings with concrete things, and the existence of leisure and opportunity for abstract thought; and hence is a guide to tendencies of mind and conduct.

The importance of indications of the height of development attained are of course greatest when they occur in the characters of the head, and to this region therefore special attention must be given. As to size, it is well known that the size of the head is no criterion of intelligence. Not only the largest heads, but the heaviest brains, on record have belonged to persons of low intelligence. The brain of a vagrant drunkard and thief weighed 67 oz.; that of an insane negro 70 oz.; the average weight of the male brain being 49½ oz. On the other hand many men of exceptionally high intelligence, *e.g.*, Raphael and Talleyrand, have had small heads; and some, *e.g.*, Byron and Shelley, have had heads much under the average size. Nor is the shape of the head any more absolute guide; for although it is as generally true that a well shaped head goes with a high degree of intelligence as that a large head does so, yet the exceptions are just as numerous and important in the one case as in the other. Many men of good intelligence have heads by

no means well proportioned, in fact asymmetrical, and every large idiot asylum can show instances of well shaped heads in persons of feeble mind. But as special forms of insanity are associated with special shapes off head, indications from this source should of course not be neglected. It is important to bear in mind the ease with which the shape of the cranium may be modified by apparently trifling causes, and the small harmful effect that such changes have upon its contents. In rabbits, so small a circumstance as the lopping off an ear, is enough to change the structure of the whole skull. The Samoans and other savage tribes alter the shape of the skull by an elaborate system of bandaging, but there is no evidence that any defect of intelligence results from this practice.

The proportion that the size of the cranium bears to that of the face is a more reliable indication of intelligence than either the size or shape of the former. In the lower vertebrata, *e.g.*, the crocodile, the proportion of the cranium to the face is inconsiderable; and, generally, the higher the grade of organization of an animal the greater does the proportion become. As we rise from the lower animals to the higher apes, from the apes to savage man, from savage to civilised, and from less intelligent to more intelligent men, the increase of proportion continues. In estimating this datum the most reliable method is to view the head in profile, and take a line from the upper border of the eyebrows through the meatus of the ear. Almost the whole of the cranium lies above this line, and almost the whole of the face proper lies below.

The connection between the configuration of the head and the amount of intelligence has occupied the attention of so many observers that it is not necessary to devote any more space to it here; and to enter upon the tendencies of mind and conduct that accompany, and are indicated by the various modifications of face and feature, would occupy more space than the meagre advantage would warrant. The general principles on which they should be studied are set forth in Mr. Darwin's book on the "Expression of the Emotions," and in Mr. Herbert Spencer's "Essay on Personal Beauty."

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