rewards is largely brought into operation with good results. The Inspectors, however, object to this, stating that they are adverse to a greater liberality to criminal lunatics than is shown to the unoffending inmates of district asylums.

Under the provisions of 5th and 6th Vict., cap. 123 there are sixteen houses in Ireland licensed for the reception of private patients. Resident in them at the close of last year were 271 inmates.

Independent of these there are institutions of a mixed character, partly on a charitable foundation, viz., Swifts, The Retreat, belonging to the Society of Friends, Palmerston House, founded as the Stewart Institute, containing imbecile children in one portion of the building and ordinary lunatics in the other, and St. Vincent's, the property of a religious community for the reception of insane ladies. Of the 808 private patients under treatment, 47 were discharged cured, 32 inproved. These returns are stated to contrast favourably with public asylums, whilst the mortality is 3¼ under the average. During the year no deed of violence, no suicide, no permanent escape, or untoward occurrence was reported as happening in any of these private institutions.

The Inspectors close their report by pointing to the Appendices as an evidence of the continuous and successful administration of the Lunacy Department during the year under review. The profit from the farms was large; the contract prices were fair, evincing the judgment and discretion of Boards of Governors; the dietary was liberal; and the quantities of food consumed properly calculated; whilst ample proof is given of the industrial aptitude of the patients by the amount of work done by them.

Enquiries into Human Faculty and its Development. By Francis Galton, F.R.S. Macmillan and Co. 1883.

We may say at once that this is a remarkable book, and though almost all the essays it contains have already appeared under other forms, we are glad to have the whole subject to which they refer comprised in a single volume. The questions discussed are calculated to excite in the strongest manner, the interest of Medical Psychologists.

The author informs the reader that his general object has been "to take note of the varied hereditary faculties of different men and of the great differences in different families and races, to learn how far history may have shown

the practicability of supplanting inefficient human stock by better strains, and to consider whether it might not be our duty to do so by such efforts as may be reasonable, thus exerting ourselves to further the ends of evolution more rapidly and with less distress than if events were left to their own course." However, so complex is the question that all Mr. Galton hopes at present to effect is to fix the position of several cardinal points. What these are we shall shortly see. Meanwhile let us refer to some of the investigations in which Mr. Galton has been so actively engaged. Take first the remarkable differences in human features, the sum of innumerable minute details. This is a fascinating subject alike for artist and psychologist, between whom there must ever be a common bond of union; for the artist has much to learn from the psychology of expression, and the psychologist is greatly assisted in his researches by the art representing the expression of psychical states. How laborious, and in a corresponding degree, how valuable is the work of an artist, is well illustrated by the fact that Mr. Galton in endeavouring to estimate the number of strokes made by an able artist in painting a portrait—every stroke being thoughtfully given—found that "during fifteen sittings of three working hours each, that is to say during forty-five hours or two thousand four hundred minutes, he worked at the average rate of ten strokes of the brush per minute. There were therefore twenty-four thousand separate traits in the completed portrait, and in his opinion some, I do not say equal, but comparably large number of units of resemblance with the original" (p. 5). No doubt, as Mr. Galton observes, English physiognomy has differed greatly at different periods, after making allowance for fashion in portrait painting. He has traced in his examination of large collections of national portraits, the signs of one predominant facial type succeeding to another. Thus the men painted by Holbein are generally characterised by high cheek bones, long upper lips, thin eyebrows, and lank, dark hair. It would be impossible, Mr. Galton thinks, for the majority of modern Englishmen to resemble the majority of Holbein's portraits by dress and arrangement of hair. They are now a fair and reddish race.

As is well known Mr. Galton has endeavoured to obtain really representative faces by his ingenious method of composite portraiture, the effect of which is "to bring into evidence all traits in which there is agreement, and to leave but a ghost of a trace of individual peculiarities," and the re-

markable thing is that this composite picture made from so many components is not a blurr. Of these pictures there are given in this volume many interesting specimens, containing, for example, numerous cases of tubercular disease in one portrait, and of a hundred non-consumptive cases in another; also of criminal types, and members of the same family. We may mention that Mr. Galton has made a number of admirable photographs of patients at Bethlem Hospital, but that he has not succeeded in obtaining composite portraitures, which would properly depict any typical form of insanity. Of the portraits of convicts Mr. Galton has obtained fairly distinct types. Some criminal composites possess a negative rather than a positive interest.

> They produce faces of a mean description with no villainy written on them. The individual faces are villainous enough, but they are villainous in different ways, and when they are combined the individual peculiarities disappear and the common humanity of a low type is all that is left (p. 15).

Of the positively criminal type the author observes that he had not adequately appreciated the utter degradation of their physiognomy; at last the sense of it took firm hold of him, and he says he "cannot now handle the portraits without overcoming by an effort the aversion they suggest." Of distinctively criminal facial convolutions, so to speak, Mr. Galton speaks as strongly as Benedikt does of those of the cerebrum in the same class. Concurrently with such physical marks Galton portrays the criminal in colours desperately black indeed, but we fear not overdrawn. His conscience is almost absent; his instincts are vicious, his power of self-control very weak, due partly to ungovernable temper and passion, and partly to imbecility; hypocrisy is common, truthfulness and remorse are equally rare.

The criminal class is, of course, perpetuated by heredity, and it may be properly urged in favour of long terms of imprisonment that their progeny is lessened. Unfortunately this class is continually increased by the addition of persons

> who, without having strongly marked criminal natures do nevertheless belong to a type of humanity that is exceedingly ill-suited to play a respectable part in our modern civilization. . . They are apt to go to the bad; their daughters consort with criminals and become the parents of criminals.

The Jukes family, in America, is a terrible example.

Mr. Galton's remarks on madness are few, but are to the

point as regards epilepsy and criminality. They refer to facts familiar to our readers and need not detain us.

We pass on to the chapter on Mental Imagery. Early in his inquiry Mr. Galton found, to his astonishment, that the great majority of men of science to whom he applied, were sublimely ignorant of any such thing, and regarded inquiries into it as fantastic.

> They had no more notion of its true nature than a colour-blind man, who has not discerned his defect has of the nature of colour. They had a mental deficiency of which they were unaware, and naturally enough supposed that those who affirmed they themselves possessed it, were romancing (p. 85).

In general society, however, Mr. Galton found a very different opinion prevailing. What *savants* and members of the French Institute could not see, ordinary men and women, boys and girls, saw with perfect distinctness. Mr. Galton is convinced that it is a much easier matter than he had hoped to obtain satisfactory answers to psychological questions. To artists the visualising faculty must be of inestimable value. Mr. Galton has, however, known some destitute of the gift who have managed to become Royal Academicians. This, however, may or may not constitute an exception to the rule, in view of the common observation that the worst as well as the best pictures exhibited at the Academy are by members of this guild. Examples are given by the author of the association of colours with different subjects, as the months, days, &c. An artist informs us that he has done so ever since he can remember, and his associations are as follows:—*Jan.* Dull orange. *Feb.* Light brown. *March.* Neutral black. *April.* Grey. *May.* Neutral tint. *June.* Yellow neutral. *July.* More orange than last. *August.* Golden grey. *Sept.* Yellowish. *Oct.* Rather grey. *Nov.* Almost black. *Dec.* Rather grey. The days of the week are coloured thus. *Sunday.* Golden reddish yellow. *Mon.* Neutral. *Tues.* Lighter red than Thursday. *Wed.* Blue. *Thurs.* Reddish. *Friday.* Brownish black. *Sat.* Yellow. Many of the letters of the alphabet have also corresponding colours.

It need hardly be said that Mr. Galton's researches on mental imagery bear closely upon the relations between ideation and sensation, the question of the seat of recalled sensory images, and the hallucinations of the insane. After all that has been written on the last subject much remains to be accurately observed in regard to their character, in-

tensity, unilateralness, the degree in which the terminal sense organ can be shown to be involved, and the relation of the hallucination of one sense to that of another. Some patients have auditory hallucinations as distinct as sounds heard by the outward ear; others, and the majority, hear voices in much more subjective fashion. The difference would appear to be due to the degree of extension of the current from the sensory centre in the cortex to the peripheral termination, rather than to the degree of intensity of the belief in the hallucination, according to which a patient might be supposed to refer his subjective sensations to a completely external stimulus. We have observed as intense and dangerous beliefs associated with hallucinations of slight as of vivid objectivity. Whatever may be the true explanation, there can be no doubt that hallucinations may in some instances have their sole seat in the sensory centres, and in others extend to the sense organs themselves. Again, some patients as they read a book hear every word distinctly uttered; just as some persons distinctly perceive the words which they hear. Further, some lunatics labouring under hallucinations of hearing, hear these subjective sounds only on one side. And are there not cases in which colours accompany auditory hallucinations? At any rate, with some patients, there may with a clash of bells be a flash of light. We refer to these interesting points in the briefest manner only to show how many questions of importance remain unanswered or suggest further inquiry, and it is to be hoped that those who are familiar with the insane will work to the same good purpose that Mr. Galton has done in regard to the sane.

Of "Number Forms," Mr. Galton gives some remarkable illustrations. Some persons in health visualise numerals so distinctly that they amount to (sane) hallucinations, and can define the direction in which they appear, and their distance. Thus, if looking at an object on the horizon at the moment a figure presents itself to their mental eye, the latter would appear to the left or right of the object, and above or below the horizon. It is also noteworthy that many observe the image of the same figure in invariably the same direction and at the same distance. And just as with the insane, others are not conscious of the same degree of objectivity; the image is more dreamlike and subjective.

These forms of figures in the sane are found to have existed as long as the latter can remember, and are quite independent of the will; they sometimes appear along a

line or are arranged in rows or in a singular framework; they are sometimes curved to the left, oftener to the right, and run more frequently upward than downward; they often have fantastic twists and curves.

The months of the year often appear as ovals, and appear in the opposite direction to those of the figures on a clock, as often as in the same direction. Mr. Galton truly observes of forms of numerals in pupils in schools that they are "the most remarkable existing instances of what is called topical memory, the essence of which appears to lie in the establishment of a more exact system of division of labour in the different parts of the brain than is usually carried on." Hence it is that topical aids to memory are of the greatest service to many persons. No doubt, as the author observes, "those who feel the advantage of these aids most strongly are the most likely to cultivate the use of numerical forms." But is it quite fair in competitive examinations that such should be allowed to gain prizes when they have in fact carried a book of answers to questions in their visualizing centres instead of in their pockets? Indeed we have known a prize-man confess that he owed his success solely to reading his notes of lectures visually when answering his examination papers!

But our space obliges us to leave this fascinating subject and proceed to say a few words on "Visionaries." Mr. Galton was surprised to find how many apparently healthy persons were subject to what they themselves described as visions, of which he regards the number-forms already described as the lowest order of examples. Mr. Galton has received many touching accounts of childish experiences of visions. Such persons supposed that all the world saw visions like themselves. They, however, soon excited astonishment in others, and surprise in themselves, by incidentally mentioning their experiences. Then followed "ridicule and a sharp scolding for their silliness, so that the poor little things shrank back into themselves and never ventured again to allude to their inner world" (page 156). One of these victims of sensory-hyperæsthesia after attending a lecture by Mr. Galton wrote to him thus: "At your lecture the other night, though I am now over twenty-nine, the memory of my childish misery, the dread of being peculiar came over me so strongly that I felt I must thank you for proving that in this particular at any rate my case is most common." Another form of vision is the instant flash of colour which, with some individuals accom-

panies sound, and which is of the highest interest. The vowel sounds chiefly call forth colours. The subjects of these coloured visions minutely describe their precise tint and hue. Rarely do two persons agree as to the associated colour. This interesting tendency is very hereditary. A third form of vision is that of visualised pictures with words. Here is Mrs. Haweis's experience:

> When I think of the word Beast it has a face something like a gurgoyle. The word Green has also a gurgoyle face, with the addition of big teeth. The word Blue blinks and looks silly and turns to the right. The word Attention has the eyes greatly turned to the left. . . Of course these faces are endless as words are, and it makes my head ache to retain them long enough to draw.

Mr. Galton's own experience in observing his field of view in perfect darkness is interesting. After straining to examine it, he observed a

> kaleidoscopic change of patterns and forms continually going on, but too fugitive and elaborate for me to draw with any approach to truth. I am astonished at their variety, and cannot guess in the remotest degree the cause of them. They disappear out of sight and memory the instant I begin to think about anything, and it is curious to me that they should often be so certainly present and yet be so habitually overlooked. If they were more vivid, the case would be very different, and it is most easily conceivable that some very slight physiological change, short of a really morbid character, would enhance their vividness (p. 159).

The Rev. George Henslow's visions are described as being much more vivid.

> When he shuts his eyes and waits he is sure in a short time to see before him the clear image of some object or other, but usually not quite natural in its shape. It then begins to change from one form to another, in his case also, for as long a time as he cares to watch it. Mr. Henslow has zealously made repeated experiments on himself, and has drawn what he sees. He has also tried how far he is able to mould the visions according to his will. In one case after much effort he contrived to bring the imagery back to its starting point, and thereby form what he terms a visual cycle (l.c.).

Of these a very curious illustration is given in one of Mr. Galton's plates.

We have no doubt Mr. Galton is right in holding that hallucinations, especially in the form of visions, are much more frequent among the sane than is generally supposed. There are, no doubt, two ways of regarding this fact: the one that there are a good many people at large in the world who are, scientifically speaking, insane; the other that

there are many whose senses are excited from within, instead of, or as well as, from without, whom it would be preposterous to regard as insane.

The important practical bearing of the latter fact is that alienists ought to be more careful than they often are in assigning, as a proof of insanity, the presence of hallucinations divorced from their relation to conduct and belief.

Mr. Galton relates the following:—

> A near relative of my own, saw phantasmagoria very frequently. She was eminently sane, and of such good constitution that her faculties were hardly impaired until near her death, at ninety. She frequently described them to me. It gave her amusement during an idle hour to watch theses faces, for their expression was always pleasing, though never strikingly beautiful. No two faces were ever alike, and no face ever resembled that of any acquaintance.

What is very important, she never mistook them for reality, although they sometimes came almost suffocatingly close to her. Mr. Galton mentions also a distinguished authoress who "once saw the principal character of one of her novels glide through the door straight up to her. It was about the size of a large doll, and it disappeared as suddenly as it came." The daughter of an eminent musician is mentioned who often seems to hear her father playing when he is not. If it be admitted that this is abnormal, it is certainly not an insanity. The tendency to see visions is hereditary, as among the second-sight seers of Scotland, whom no one regards as more lunatic than their fellow-countrymen.

By means of ingenious psychometric experiments Mr. Galton has shown how mental operations which have passed out of the ordinary range of consciousness, can not only be recalled, but recorded in a statistical form, and he has shown measurably the rate at which associations spring up, the date of their formation, their tendency to recur, and their relative precedence. These experiments show—what, indeed for some years, has been more and more perceived by psychologists, the enormous number of operations of which the mind is unconscious, thus indicating a depth of mental action entirely "below the level of consciousness, which may account for such mental phenomena as cannot otherwise be explained. We gain an insight by these experiments into the marvellous number and nimbleness of our mental association, and we learn also that they are very far indeed

from being infinite in their variety." Our space does not allow a detailed description of these experiments; we can only briefly refer to them. In his first experiments Mr. Galton walked slowly along Pall Mall (450 yards) and scrutinised every object (about 300), and allowed his attention to rest on them until one or two thoughts had arisen through direct association with the object, never allowing his mind to ramble. He found that although it was impossible to recall clearly the numerous ideas which had passed through his mind, samples of his whole life came before him, including many byegone incidents never suspected to have formed part of his mental furniture. He was perfectly amazed at the unexpected extent of every day mentality. In a few days he repeated his walk, and was struck as before by the number of events to which his ideas referred, and about which he had never consciously occupied himself for years. He, however, found that there was a great deal of repetition of thought, and that the same actors appeared again and again upon the stage. In order to secure these fleeting thoughts, and submit them to statistical analysis, he selected a list of suitable words and wrote them on small sheets of paper—

> Taking care to dismiss them from my thoughts when not engaged upon them, and allowing some days to elapse before I began to use them, I laid one of these sheets with all due precautions under a book, but not wholly covered by it, so that when I leaned forward I could see one of the words, being previously quite ignorant of what the word would be. Also I held a small chronograph, which I started by pressing a spring the moment the word caught my eye, and which stopped of itself the instant I released the spring; and this I did so soon as about a couple of ideas in direct association with the word had arisen in my mind. I found that I could not manage to recollect more than two ideas with the needed precision, at least not in a general way; but sometimes several ideas occurred so nearly together that I was able to record three or even four of them, while sometimes I only managed one. The second ideas were never derived from the first, but always direct from the word itself, for I kept my attention firmly fixed on the word, and the associated ideas were seen only by a half glance. When the two ideas had occurred I stopped the chronograph and wrote them down, and the time they occupied. It was a most repugnant and laborious work, and it was only by strong self-control that I went through my schedule according to programme. The list of words I finally secured was 75 in number, though I began with more.

Mr. Galton found it took 660 seconds to form 505 ideas, being at the rate of 50 in a minute. His list of 75 words gone

over four times gave rise to 505 ideas, and 13 cases of puzzle in which nothing sufficiently definite to note occurred within the brief maximum period of about four seconds, that he allowed himself in any such trial. Of these 505 only 289 were different. Out of every 100 words, 23 gave rise to exactly the same association in every one of the four trials; 21 to the same association in three out of the four, and so on. For the tables prepared by Mr. Galton we must refer the reader to the work itself, and we hope that others will be stimulated to pursue similar experiments on themselves, and record the results in this Journal.

Mr. Galton's observations on what he calls the ante-chamber of consciousness are much to the point. When trying to think anything out, the ideas that lie at any moment within the full consciousness seem to him to attract of their own accord the most appropriate out of a number of other ideas lying close at hand, but imperfectly within the range of consciousness.

> A sort of presence-chamber where full consciousness holds court, and where two or three ideas are at the same time in audience, and an ante-chamber full of more or less allied ideas, which is situated just beyond the full ken of consciousness. Out of this ante-chamber the ideas most nearly allied to those in the presence-chamber appear to be summoned in a mechanically logical way and to have their turn of audience.

Mr. Galton describes the progress of thought here as depending first, on a large attendance in the ante-chamber; second, on the presence of ideas only germane to the subject; and, thirdly, on the justness of the above-mentioned summoning-mechanism. The flow of ideas in the ante-chamber is involuntary—they cannot be created. The exclusion of ideas foreign to the subject is accompanied by a sense of effort and will, whenever the subject is unattractive; "otherwise it proceeds automatically, for if an intruding idea finds nothing to cling to, it is unable to hold its place in the ante-chamber, and slides back again." We must not, however, proceed further with this interesting description, or we should be in danger of transferring the whole chapter to our pages.

Briefly to summarise Mr. Galton's conclusions: The first point is the vast variety of natural faculty in the same race, and still more when regard is had to the whole human family, all which tends to be transmitted.

The second point is that the faculties of men generally are not equal to the claims of modern civilization, in conse-

quence of our ancestors having till recently lived under conditions far from civilized, and the somewhat capricious distribution of inherited powers, affording in this way immunity, more or less, from the ordinary agencies of selection. Mr. Galton has proved the greatly preponderating influence of nature over nurture, by pursuing the life-history of twins, a subject to which, as is well known, he has devoted so much laborious and intelligent investigation. He has shown, indeed, that no improvement in mere education can compensate for a retrograde condition of the gifts of nature.

It may be stated axiomatically that upon race depends the root and flower of human faculty; that humanity consequently is variable, and that, therefore, we are obliged to inquire into the true place and function of man in the Universe. The author confesses that the solution of the problem remains doubtful. In common with an increasing number of inquirers, he is sensible that it is not so transparently clear as is often imagined. One result is the conviction that man is a member of a system of enormous range, resembling from one point of view "a cosmic republic." Confessedly long indeed has the period of growth and development been, under, to all appearance, a very definite system of causative influences, with a splendid profusion of means or instruments and of time, and a disregard of the ignorance which has run counter to, and become the victim of, these conditions.

In the recognition of the awful mysteries of life and of that which Mr. Galton feels to be wholly inscrutable, anterior to the earliest evolution, we find ourselves face to face with intelligent man as its latest outcome. "Man knows," Mr. Galton observes, "how petty he is, but he also perceives that he stands here, on this particular earth, at this particular time, as the heir of untold ages, and in the van of circumstance." Mr. Galton, therefore, thinks that he may be too diffident as to the functions which he can, and ought to perform in the great drama of life, and that he should rise to the consciousness of the power which he possesses of shaping, to some extent at least, the future course of his race. That which Mr. Galton speaks of as "the awful mystery of conscious existence and the inscrutable background of evolution" is referred to in the same spirit by the Waynflete Professor of Physiology (Dr. Burdon Sanderson) in his recent lecture "On the Study of Physiology" at Oxford, when he observes—"Towards the problem of the nature of the psychical concomitants of the excitatory process in the

brain we can contribute nothing, simply because they are not things which we can compare with any standards we possess. All that we can do about them is to localize them, but in accomplishing this, we are well aware that our researches neither help nor hinder us in the endeavour to penetrate the mystery of our own existence. All this is so plain that it would appear superfluous to state it, were there not persons who need to be informed on the subject, persons who imagine that because our method is founded on the assumption that every material process is the product of material influences, every measurable effect the product of measurable causes, we extend that method to things beyond our province, namely, to things which cannot be measured. A physiologist may be a philosopher if he has the gift for it, but from the moment that he enters the field of philosophy he leaves his tools behind him. . . . We are checked, not by the complexity of the phenomena, but by the encounter with something else which as physiologists we have no means of grasping."

The question, of course, arises, how can Man best promote this end? The reply is, by acting in harmony with and advancing in all possible ways the course of development hitherto in operation. He must discover by his intelligence, and expedite by his energy, those changes which the adaptation of circumstance to race, and race to circumstance, demand. The history of the past clearly shows that his influence has been great in the same direction, to secure such ends as conquest or emigration. It is to the unused means of his influence, however, to which Mr. Galton more especially refers. By showing how largely the balance of population may be affected by early marriages, and how endowments have checked the marriages of monks and scholars, he indicates how much greater and better an influence might be exerted by promoting early marriages in classes which it is desirable to favour. He endeavours also to show, though with less success, that "a public recognition in early life of the probability of future performance, as based on the past performance of the ancestors of the child" would exert a powerful influence on progress. For repression of those stocks which it is undesirable to perpetuate, Mr. Galton has no more definite form of Malthusianism to propose than the voluntary celibacy of those who are convinced that their progeny would be unfitted to make good citizens, and for such patriotic bachelors and spinsters he accords in advance the thanks of a grateful country.

Alas for the future of our race and the evolutions of a higher humanity, if these are in ever so small a degree to depend upon such self-denying lovers of their kind! Past development owes its impulse to very different influences and motives than those which the author proposes, and we may reasonably suppose that the development of the future will be on the same lines.

In conclusion we may say that it is always a pleasure to read what Mr. Galton writes. If the results of his investigations are not always a solid gain to our knowledge, and admit only of very limited application to the progress of the race, he at any rate originates a host of suggestions. He has brought to our own branch a mass of fresh ideas, and it is our own fault if we do not utilize and extend them. We confess it is little to the credit of us, medical psychologists, that we have not hitherto pursued the same line of inquiry with like zeal and fertility of experiment.

Die Alcoholischen Geisteskrankheiten in Basler Irrenhause. Vom damaligen Assistenzarzte WILHELM VON SPEYR, 1882.

(*Concluded from p.* 284.)

In our previous notice of Dr. W. von Speyr's sketch of the various forms of mental disturbance induced by alcoholic excess, we cited some of his cases and commentaries on (1) Alcoholismus Acutus, (2) Alcoholic Insanity of the Acute Variety. The remaining varieties, (3) Chronic Alcoholic Insanity, (4) Delirium Tremens, and (5) Chronic Alcoholism are sketched with much discrimination and lucidity, but our space will not allow of our doing justice to the descriptions, and we shall only briefly pass them in review.

Of the cases given under chronic alcoholic insanity, we would refer to that in which there was marked exaltation of ideas, seeing that some difference of opinion exists on the subject. It is the only instance met with by Dr. von Speyr.

W. J. J., a merchant, married. His father was a drunkard. The son squinted from youth, was delicate and nervous, and when a lad of eight had a vision after taking a moderate amount of wine. He masturbated. When older he drank to excess, and took absinthe. The consequence was, after being married three years, he was separated from his wife and was dismissed from his place. Two years after, he was admitted into the Basle Asylum suffering from "delirium potatorum," with delusion, of persecution. In 1867 he was admitted for the second time, labouring under "chronic delusions of persecu-