

smaller, as we know, is very compact, strong, and effective. Sir Peter Teazle looks like carrying sixteen stone to hounds, with mighty arms recalling those of the Flying Dutchman; but his power does not interfere with his quality, which is first-class. Highflyer and Beningbrough, especially the latter, belong to the very noblest type of race-horses. If anybody can look at them and retain his confidence in our modern superiority, he and I see with different eyes.

There is still one more of the great departed to whom I would call particular attention—Dorimant, by Otho (dam, by Babraham, of the Godolphin Arabian line); he was the best, or nearly the best, racer of his day; better than Shark, or Potatoes, or Dictator, and capable, I think, of disputing the primacy with Highflyer. Highflyer, no doubt, beat him the only time they met; but it was Dorimant's last appearance in public after a career that had lasted much longer, and been filled up with much harder work, than that of his unconquerable antagonist. His pedigree, moreover, is a singularly interesting one, and the cross ought to have been of great value among our somewhat restricted and continually narrowing alliances. He came down from the Darley Arabian through a separate and somewhat peculiar line of ancestors—a line apart from the Childerses altogether. His failure to influence our blood stock permanently I have always deeply regretted; he was the sire of several good horses, but his owner, Lord Ossory, seems to have kept him entirely for his own stud; his opportunities, therefore, of making a lasting impression were few, and the family has died out. His portrait represents, I think, absolutely the most powerful blood horse I have ever seen, and he is galloping seemingly with great resolution. I should not say, judging from his appearance, that speed had been his forte; but if the late Daniel Lambert had wanted a hunter, there was the horse for him. Oddly enough, of all the portraits I have looked up, the eminent, or rather pre-eminent Waxy presents the meanest figure. I should have pronounced him, if he had been shown to me without a name, to be a cleverish cover-hack; but again it is impossible to decide whether he has been fairly treated by the artist.

I may say, in conclusion, that if any Croesus at the Antipodes were anxious to try a new and interesting experiment, there are the zebras ready to his hand; the Congo daw, or *Hippotigris antiquorum*, possesses, as far as I can judge, the raw materials of a racer in a far higher degree than any of the true wild horses. The quagga, again, possesses more strength, and I dare say there are a dozen other varieties scattered over the vast African continent, with special gifts and energies, valuable for future combinations. Thus an Austral horse, in time and with good fortune, might be developed out of the striped equidæ, which should put the original achievement of the first shepherd king, as an *ἵππόδαμος*, to shame.

FRANCIS H. DOYLE.

THE VISIONS OF SANE PERSONS.

IN the course of some recent inquiries into visual memory, I was greatly struck by the frequency of the replies in which my informants described themselves as subject to "visions." Those of whom I speak were sane and healthy, but were subject notwithstanding to visual presentations, for which they could not often account, and which in a few cases reached the level of hallucinations. This unexpected prevalence of a visionary tendency among persons who form a part of ordinary society seems to me suggestive and worthy of being put on record. In a previous article¹ I spoke of the faculty of summoning scenes at will, with more or less distinctness, before the visual memory; in this I shall speak of the tendency among sane and healthy persons to see images flash unaccountably into existence.

Many of my facts are derived from personal friends of whose accuracy I have no doubt. Another group comes from correspondents who have written at length with much painstaking, and whose letters appear to me to bear internal marks of scrupulous truthfulness. A third part has been collected for me by many kind friends in many countries, each of whom has made himself or herself an independent centre of inquiry; and the last, and much the most numerous portion, consists of brief replies by strangers to a series of questions contained in a circular that I drew up. I have gone over all this matter with great care, and have cross-tested it in many ways whilst it was accumulating, just as any conscientious statistician would, before I began to form conclusions. I was soon convinced of its substantial trustworthiness, and that conviction has in no way been shaken by subsequent experience. In short, the evidence of the four groups I have just mentioned is quite as consistent as could have been reasonably desired.

The lowest order of phenomena that admit of being classed as visions, are the "Number forms" to which I have drawn attention on more than one occasion, but to which I must again very briefly allude. They are an abiding mental peculiarity in a certain proportion of persons (say 5 per cent.), who are unable as adults, and who have been ever unable as far back as they can recollect, to think of any number without referring it to its own particular habitat in their mental field of view. It there lies latent but is instantly evoked by the thought or mention of it, or by any mental operation in which it is concerned. The thought of a series of consecutive numbers is therefore attended by a vision of them arranged

(1) See a previous article on "Mental Imagery," September, 1880.

in a perfectly defined and constant position, and this I have called a "Number form." Its origin can rarely be referred to any nursery diagram, to the clock-face, or to any incident of childhood. Nay, the form is frequently unlike anything the child could possibly have seen, reaching in long vistas and perspectives, and in curves of double curvature. I have even had to get wire models made by some of my informants in explanation of what they wished to convey. The only feature that all the forms have in common is their dependence in some way or other upon the method of verbal counting, as shown by their angles and other divisions occurring at such points as those where the 'teens begin, at the twenty's, thirty's, and so on. The forms are in each case absolutely unchangeable except through a gradual development in complexity. Their diversity is endless, and the Number forms of different men are mutually unintelligible.

These strange "visions," which are extremely vivid in some cases, are almost incredible to the vast majority of mankind, who would set them down as fantastic nonsense, but they are familiar parts of the mental furniture of the rest, where they have grown naturally and where they remain unmodified and unmodifiable by teaching. I have received many touching accounts of their childish experiences from persons who see the Number forms, and the other curious visions of which I shall speak. As is the case with the colour blind, so with these seers. They imagined at first that everybody else had the same way of regarding things as themselves. Then they betrayed their peculiarities by some chance remark which called forth a stare of surprise, followed by ridicule and a sharp scolding for their silliness, so that the poor little things shrunk back into themselves, and never ventured again to allude to their inner world. I will quote just one of many similar letters as a sample. I received this, together with much interesting information, immediately after a lecture I gave last autumn to the British Association at Swansea¹ in which I had occasion to speak of the Number forms. The writer says—

"I had no idea for many years, that every one did not imagine numbers in the same positions as those in which they appear to me. One unfortunate day I spoke of it, and was sharply rebuked for my absurdity. Being a very sensitive child I felt this acutely, but nothing ever shook my belief that, absurd or not, I always saw numbers in this particular way. I began to be ashamed of what I considered a peculiarity, and to imagine myself, from this and various other mental beliefs and states, as somewhat isolated and peculiar. At your lecture the other night, though I am now over twenty-nine, the memory of my childish misery at 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."

The next form of vision of which I will speak is the instant association of colour, with sound, which characterizes a small per-

(1) See *Fortnightly Review*, September, 1880.

centage of adults, but appears to be rather common, though in an ill-developed degree, among children. I can here appeal not only to my own collection of facts, but to those of others, for the subject has latterly excited some interest in Germany. The first widely known case was that of the brothers Nussbaumer, published in 1873 by Professor Bruhl, of Vienna, of which the English reader will find an account in the last volume of Lewis's *Problems of Life and Mind* (p. 280). Since then many occasional notices of similar associations have appeared, but I was not aware that it had been inquired into on a large scale by any one but myself. However, I was gratified by meeting with a pamphlet a few weeks ago, just published in Leipsic by two Swiss investigators, Messrs. Bleuler and Lehmann. Their collection of cases is fully as large as my own, and their results in the more important matters are similar to mine. One of the two authors had the faculty very strongly, and the other had not; so they worked conjointly with advantage. As my present object is to subordinate details to the general impression that I wish to convey of the visionary tendency of certain minds, I will simply remark, first, that the persistence of the colour association with sounds is fully as remarkable as that of the Number form with numbers. Secondly, that the vowel sounds chiefly evoke them. Thirdly, that the seers are invariably most minute in their description of the precise tint and hue of the colour. They are never satisfied, for instance, with saying "blue," but will take a great deal of trouble to express or to match the particular blue they mean. Lastly, no two people agree, or hardly ever do so, as to the colour they associate with the same sound. I have one of the most extraordinary diagrams of these colour associations that has, I suppose, ever been produced. It has been drawn by Mr. J. Key, of Graham's Town, South Africa. He sent me in the first instance a communication on the subject, which led to further correspondence, and eventually to the production of this diagram of colours in connection with letters and words. I have no reason to doubt its trustworthiness, and am bound to say that, strange as it looks, and elaborate as it is, I have other written accounts that almost match it.

A third curious and abiding fantasy of certain persons is invariably to connect visualised pictures with words, the same picture to the same word. I have collected many cases of this, and am much indebted to the authoress, Mrs. Haweis, who sees these pictures, for her kindness in sketching some of them for me, and her permission to use her name in guarantee of their genuineness. She

says:—

"Printed words have always had faces to me; they had definite expressions, and certain faces made me think of certain words. The words had no connection with these except sometimes by accident. The instances I give are few

and ridiculous. When I think of the word *Beast*, it has a face something like a gargoyle. The word *Green* has also a gargoyle 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. It is difficult to draw them properly because like 'Alice's' 'Cheshire cat,' which at times became a grin without a cat, these faces have expression without features. The expression of course " [note the *voiced* phrase "of course."—F. G.] " depends greatly on those of the letters, which have likewise their faces and figures. All the little *a's* turn their eyes to the left, this determines the eyes of *Attention*. *Ant*, however, looks a little down. Of course these faces are endless as words are, and it makes my head ache to retain them long enough to draw."

Some of the figures are very quaint. Thus the interrogation "what?" always excites the idea of a fat man cracking a long whip. They are not the capricious creations of the fancy of the moment, but are the regular concomitants of the words, and have been so as far back as the memory is able to recall.

When in perfect darkness, if the field of view be carefully watched, many persons will find a perpetual series of changes to be going on automatically and wastefully in it. I have much evidence of this. I will give my own experience the first, which is striking to me, because I am very unimpressionable in these matters. I visualise with effort; I am peculiarly inapt to see "after-images," "phosphores," "light-dust," and other phenomena due to weak sight or sensitiveness; and, again, before I thought of carefully trying, I should have emphatically declared that my field of view in the dark was essentially of a uniform black, subject to an occasional light-purple cloudiness and other small variations. Now, however, after habituating myself to examine it with the same sort of strain that one tries to decipher a sign-post in the dark, I have found out that this is by no means the case, but that a kaleidoscopic change of patterns and forms is continually going on, but they are too fugitive and elaborate for me to draw with any approach to truth. My deficiencies, however, are well supplied by other drawings in my possession. They are by the Rev. George Henslow, whose visions are far more vivid than mine. His experiences are not unlike those of Goethe, who said, in an often-quoted passage, that whenever he bent his head and closed his eyes and thought of a rose, a sort of rosette made its appearance, which would not keep its shape steady for a moment, but unfolded from within, throwing out a succession of petals, mostly red but sometimes green, and that it continued to do so without change in brightness and without causing him any fatigue so long as he cared to watch it. Mr. Henslow, when he shuts his eyes and waits, 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 object 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 to form what he terms a "visual cycle." The following account is extracted and condensed from his very interesting letter.

The first image that spontaneously presented itself was a cross-bow; this was immediately provided with an arrow, remarkable for its pronounced barb and superabundance of feathering. Some person, but too indistinct to recognise much more of him than the hands, appeared to shoot the arrow from the bow. The single arrow was then accompanied by a flight of arrows from right to left, which completely occupied the field of vision. These changed into falling stars, then into flakes of a heavy snow-storm; the ground gradually appeared as a sheet of snow where previously there had been vacant space. Then a well-known rectory, fish-ponds, walls, &c., all covered with snow, came into view most vividly and clearly defined. This somehow suggested another view, impressed on his mind in childhood, of a spring morning, brilliant sun, and a bed of red tulips: the tulips gradually vanished except one, which appeared now to be isolated and to stand in the usual point of sight. It was a single tulip, but became double. The petals then fell off rapidly in a continuous series until there was nothing left but the pistil, but (as is almost invariably the case with his objects) that part was greatly exaggerated. The stigmas then changed into three branching brown horns; then into a knob, while the stalk changed into a stick. A slight bend in it seems to have suggested a contro-bit; this passed into a sort of pin passing through a metal plate; this again into a lock, and afterwards into a nondescript shape, distantly suggestive of the original cross-bow. Here Mr. Henslow endeavoured to force his will upon the visions, and to reproduce the cross-bow, but the first attempt was an utter failure. The figure changed into a leather strap with loops, but while he still endeavoured to change it into a bow the strap broke, the two ends were separated, but it happened that an imaginary string connected them. This was the first concession of his automatic chain of thoughts to his will. By a continued effort the bow came, and then no difficulty was felt in converting it into the cross-bow and thus returning to the starting point.

I have a sufficient variety of cases to prove the continuity between all the forms of visualisation, beginning with an almost total absence of it, and ending with a complete hallucination. The continuity is, however, not simply that of varying degrees of intensity, but of variations in the character of the process itself, so that it is by no means uncommon to find two very different forms of it concurrent in the same person. There are some who visualise well and who also are seers of visions, who declare that the vision is not a vivid visualisation, but altogether a different phenomenon. In short, if we please to call all sensations due to external impressions "*direct*," and all others "*induced*," then there are many channels through which the induction may take place, and the channel of ordinary visualisation in the persons just mentioned is very different from that through which their visions arise.

The following is a good instance of this condition. A friend writes:—

"These visions often appear with startling vividness, and so far from depending on any voluntary effort of the mind, they remain when I often wish them

very much to depart, and no effort of the imagination can call them up. I lately saw a framed portrait of a face which seemed more lovely than any painting I have ever seen, and again I often see fine landscapes which bear no resemblance to any scenery I have ever looked upon. I find it difficult to define the difference between a waking vision and a mental image, although the difference is very apparent to myself. I think I can do it best in this way. If you go into a theatre and look at a scene, say of a forest by moonlight, at the back part of the stage, you see every object distinctly and sufficiently illuminated (being thus unlike a mere act of memory), but it is nevertheless vague and shadowy, and you might have difficulty in telling afterwards all the objects you have seen. This resembles a mental image in point of clearness. The waking vision is like what one sees in the open street in broad daylight, when every object is distinctly impressed on the memory. The two kinds of imagery differ also as regards voluntariness, the image being entirely subservient to the will, the visions entirely independent of it. They differ also in point of suddenness, the images being formed comparatively slowly as memory recalls each detail, and fading slowly as the mental effort to retain them is relaxed; the visions appearing and vanishing in an instant. The waking visions seem quite close, filling as it were the whole head, while the mental image seems further away in some far off recess of the mind."

The number of persons who see visions no less distinctly than this correspondent is much greater than I had any idea of when I began this inquiry. I have in my possession the sketch of one, prefaced by a description of it by Mrs. Haweis. She says:—

"All my life long I have had one very constantly recurring vision, a sight which came whenever it was dark or darkish, in bed or otherwise. It is a flight of pink roses floating in a mass from left to right, and this cloud or mass of roses is presently effaced by a flight of 'sparks' or gold speckles across them. The sparks totter or vibrate from left to right, but they fly distinctly upwards: they are like tiny blocks, half gold, half black, rather symmetrically placed behind each other, and they are always in a hurry to efface the roses: sometimes they have come at my call, sometimes by surprise, but they are always equally pleasing. What interests me most is that when a child under nine the flight of roses was light, slow, soft, close to my eyes, roses so large and brilliant and palpable that I tried to touch them: the scent was overpowering, the petals perfect, with leaves peeping here and there, texture and motion all natural. They would stay a long time before the sparks came, and they occupied a large area in black space. Then the sparks came slowly flying, and generally, not always, effaced the roses at once, and every effort to retain the roses failed. Since an early age the flight of roses has annually grown smaller, swifter, and farther off, till by the time I was grown up my vision had become a speck, so instantaneous that I had hardly time to realise that it was there before the fading sparks showed that it was past. This is how they still come. The pleasure of them is past, and it always depresses me to speak of them, though I do not now, as I did when a child, connect the vision with any elevated spiritual state. But when I read Tennyson's "Holy Grail," I wondered whether anybody else had had my vision.—"Rose-red, with beatings in it." I may add, I was a London child who never was in the country but once, and I connect no particular flowers with that visit. I may almost say that I had never seen a rose, certainly not a quantity of them together."

A common form of vision is a phantasmagoria, or the appearance of a crowd of phantoms, perhaps hurrying past like men in a street. It is occasionally seen in broad daylight, much more often in the dark;

it may be at the instant of putting out the candle, but it generally comes on when the person is in bed, preparing to sleep, but is by no means yet asleep. I know no less than three men, eminent in the scientific world, who have these phantasmagoria in one form or another. A near relative of my own had them in a marked degree. 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 these faces, for their expression was always pleasing, though never strikingly so. No two faces were ever alike, and they never resembled that of any acquaintance. When she was not well the faces usually came nearer to her, sometimes almost suffocatingly close. She never mistook them for reality, although they were very distinct. This is quite a typical case, similar in most respects to many others that I have.

A notable proportion of sane persons have had not only visions, but actual hallucinations of sight, sound, or other sense, at one or more periods of their lives. I have a considerable packet of instances contributed by my personal friends, besides a large number communicated to me by other correspondents. One lady, a distinguished authoress, who was at the time a little "fidgeted," but in no way overwrought or ill, said that she 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. Another lady, the daughter of an eminent musician, often imagines she hears her father playing. The day she told me of it the incident had again occurred. She was sitting in a room with her maid, and she asked the maid to open the door that she might hear the music better. The moment the maid got up the hallucination disappeared. Again, another lady, apparently in vigorous health, and belonging to a vigorous family, told me that during some past months she had been plagued by voices. The words were at first simple nonsense; then the word "pray" was frequently repeated; this was followed by some more or less coherent sentences of little import, and finally the voices left her. In short, the familiar hallucinations of the insane are to be met with far more frequently than is commonly supposed, among people moving in society and in normal health.

I have now nearly done with my summary of facts; it remains to make a few comments on them.

The weirdness of visions lies in their sudden appearance, in their vividness while present, and in their sudden departure. An incident in the Zoological Gardens struck me as a helpful simile. I happened to walk to the seal-pond at a moment when a sheen rested on the unbroken surface of the water. After waiting a while I

became suddenly aware of the head of a seal, black, conspicuous, and motionless, just as though it had always been there, at a spot on which my eye had rested a moment previously and seen nothing. Again, after awhile my eye wandered, and on its returning to the spot, the seal was gone. The water had closed in silence over its head without leaving a ripple, and the sheen on the surface of the pond was as unbroken as when I first reached it. Where did the seal come from, and whither did it go? This could easily have been answered if the glare had not obstructed the view of the movements of the animal under water. As it was, a solitary link in a continuous chain of actions stood isolated from all the rest. So it is with the visions; a single stage in a series of mental processes emerges into the domain of consciousness. All that precedes and follows lies outside of it, and its character can only be inferred. We see in a general way, that a condition of the presentation of visions lies in the over-sensitiveness of certain tracks or domains of brain action, and the under-sensitiveness of others; certain stages in a mental process being vividly represented in consciousness while the other stages are unfelt. It is also well known that a condition of partial hyperaesthesia and partial anaesthesia is a frequent functional disorder, markedly so among the hysterical and hypnotic, and an organic disorder among the insane. The abundant facts that I have collected show that it may also coexist with all the appearances of good health and sober judgment.

A convenient distinction is made between hallucinations and illusions. Hallucinations are defined as appearances wholly due to fancy; illusions, as misrepresentations of objects actually seen. There is, however, a hybrid case which deserves to be specifically classed, and arising in this way. Vision, or any other sensation, may, as already stated, be a "direct" sensation excited in the ordinary way through the sense organs, or it may be an "induced" sensation excited from within. We have, therefore, direct vision and induced vision, and either of these may be the ground of an illusion. So we have three cases to consider, and not two. There is simple hallucination, which depends on induced vision justly observed; there is simple illusion, which depends on direct vision fancifully observed; and there is the hybrid case of which I spoke, which depends on induced vision fancifully observed. The problems we have to consider are, on the one hand, those connected with induced vision, and, on the other hand, those connected with the interpretation of vision, whether the vision be direct or induced.

It is probable that much of what passes for hallucination proper belongs in reality to the hybrid case, being an illusive interpretation of some induced visual cloud or blur. I spoke of the ever-varying patterns in the field of view; these, under some slight functional

change, might easily become more consciously present, and be interpreted into fantasmal appearances. Many cases, if space allowed, could be adduced to support this view.

I will begin, then, with illusions. What is the process by which they are established? There is no simpler way of understanding it than by trying, as children often do, to see "faces in the fire," and to carefully watch the way in which they are first caught. Let us call to mind at the same time the experience of past illnesses, when the listless gaze wandered over the patterns on the wall-paper and the shadows of the bed-curtains, and slowly evoked faces and figures that were not easily laid again. The process of making the faces is so rapid in health that it is difficult to analyze it without the recollection of what took place more slowly when we were weakened by illness. The first essential element in their construction is, I believe, the smallness of the area upon which the attention is directed at any instant, so that the eye has to move much before it has travelled over every part of the object towards which it is directed. It is as with a plough, that must travel many miles before the whole of a small field can be tilled, but with this important difference—the plough travels methodically up and down in parallel furrows, the eye wanders in devious curves, with abrupt bends, and the direction of its course at any instant depends on four causes: on the most convenient muscular motion in a general sense, on idiosyncrasy, on the mood, and on the associations current at the moment. The effect of idiosyncrasy is excellently illustrated by the "Number forms," where we saw that a very special sharply defined track of mental vision was preferred by each individual who sees them. The influence of the mood of the moment is shown in the curves that characterize the various emotions, as the lank drooping lines of grief, which make the weeping willow so fit an emblem of it. In constructing fire-faces it seems to me that the eye in its wanderings follows a favourite course, and notices the points in the pictures at large that coincide with its course. It feels its way, easily diverted by associations based on what has just been noticed, and so by the unconscious practice of a system of "trial and error," at last finds a track that will suit—one that is easy to follow and that also makes a complete picture. The process is essentially the same as that of getting a clear idea from out of a confused multitude of facts. The fancy picture is dwelt upon, all that is incongruous with it becomes disregarded, while all deficiencies in it are supplied by the fantasy. These latest stages are easily represented after the fashion of a diorama. Three lanterns are made to converge on the same screen. The first throws an image of what the imagination will discard, the second of that which it will retain, the third of that which it will supply. Turn

on the first and second, and the picture on the screen will be identical with that which fell on the retina. Shut off the first and turn on the third, and the picture will be identical with the illusion.

Visions, like dreams, are often mere patchworks built up of bits of recollections. The following is one of these:—

“When passing a shop in Tottenham Court Road, I went in to order a Dutch cheese, and the proprietor (a bull-headed man whom I had never seen before) rolled a cheese on the marble slab of his counter, asking me if that one would do. I answered ‘yes,’ left the shop and thought no more of the incident. The following evening, on closing my eyes, I saw a head detached from the body rolling about slightly on a white surface. I recognised the face but could not remember where I had seen it, and it was only after thinking about it for some time that I identified it as that of the cheesemonger who had sold me the cheese on the previous day. I may mention that I have often seen the man since, and that I found the vision I saw was exactly like him, although if I had been asked to describe the man before I saw the vision I should have been unable to do so.”

Recollections need not be joined like mosaic-work; they may be blended, on the principle I described two years ago, of making composite portraits. I showed that if two lanterns were converged upon the same screen, and the portrait of one person was put into one and that of another person into the other, the portraits being taken under similar aspects and states of light and shade, then on adjusting the two images eye to eye and mouth to mouth, and so superposing them as exactly as the conditions admitted, a new face will spring into existence. It will have a striking appearance of individuality, and will bear a family likeness to each of its constituents. I also showed that these composite portraits admitted of being made photographically¹ from a large number of components. I suspect that the phantasmagoria may be due to blended memories; the number of possible combinations would be practically endless, and each combination would give a new face. There would thus be no limit to the dies in the coinage of the brain.

I have tried a modification of this process with but small success, which will at least illustrate a cause of the tendency in many cases to visualise grotesque forms. My object was to efface from a portrait that which was common among persons of the same race, and therefore too familiar to attract attention, and to leave whatever was peculiar in it. I proceeded on the following principle:—We all know that the photographic negative is the converse (or nearly so) of the photographic positive, the one showing whites where the other shows blacks, and *vice versa*. Hence the superposition of a negative upon a positive transparency of the same portrait tends to create a uniform smudge. By superposing a negative transparency of a composite portrait on a positive of any one of the individual faces from which it was composed, all that is common to the group ought

(1) I have latterly much improved the process and hope shortly to describe it elsewhere.

to be smudged out, and all that is personal and peculiar to that face ought to remain.

I have found that the peculiarities of visualisation, such as the tendency to see Number-forms, and the still rarer tendency to associate colour with sound, is strongly hereditary, and I should infer, what facts seem to confirm, that the tendency to be a seer of visions is equally so. Under these circumstances we should expect that it would be unequally developed in different races, and that a large natural gift of the visionary faculty might become characteristic not only of certain families, as among the second-sight seers of Scotland, but of certain races, as that of the Gipsies.

It happens that the mere acts of fasting, of want of sleep, and of solitary musing, are severally conducive to visions. I have myself been told of cases in which persons accidentally long deprived of food became subject to them. One was of a pleasure-party driven out to sea, and not being able to reach the coast till nightfall, at a place where they got shelter but nothing to eat. They were mentally at ease and conscious of safety, but they were all troubled with visions, half dreams and half hallucinations. The cases of visions following protracted wakefulness are well known, and I also have collected a few. As regards the effect of solitariness, it may be sufficient to allude to the recognised advantages of social amusements in the treatment of the insane. It follows that the spiritual discipline undergone for purposes of self-control and self-mortification have also the incidental effect of producing visions. It is to be expected that these should often bear a close relation to the prevalent subjects of thought, and although they may be really no more than the products of one portion of the brain, which another portion of the same brain is engaged in contemplating, they often, through error, receive a religious sanction. This is notably the case among half-civilised races.

The number of great men who have been once, twice, or more frequently subject to hallucinations is considerable. A list, to which it would be easy to make large additions, is given by Brierre de Boismont (*Hallucinations, &c.*, 1862), from whom I translate the following account of the star of the first Napoleon, which he heard, second-hand, from General Rapp:—

“In 1806 General Rapp, on his return from the siege of Dantzic, having occasion to speak to the Emperor, entered his study without being announced. He found him so absorbed that his entry was unperceived. The General seeing the Emperor continue motionless, thought he might be ill and purposely made a noise. Napoleon immediately roused himself, and without any preamble, seizing Rapp by the arm, said to him, pointing to the sky, ‘Look there, up there.’ The General remained silent, but on being asked a second time, he answered that he perceived nothing. ‘What!’ replied the Emperor, ‘you do not see it?’ It is my star, it is before you, brilliant;’ then animating by degrees, he cried out, ‘it has never abandoned me, I see it on all great occasions, it commands me to go forward, and it is a constant sign of good fortune to me.’”

It appears that stars of this kind, so frequently spoken of in history, and so well known as a metaphor in language, are a common hallucination of the insane. Briere de Boismont has a chapter on the stars of great men. I cannot doubt that fantasies of this description were in some cases the basis of that firm belief in astrology, which not a few persons of eminence formerly entertained.

The hallucinations of great men may be accounted for in part by their sharing a tendency which we have seen to be not uncommon in the human race, and which, if it happens to be natural to them, is liable to be developed in their over-wrought brains by the isolation of their lives. A man in the position of the first Napoleon could have no intimate associates; a great philosopher who explores ways of thought far ahead of his contemporaries must have an inner world in which he passes long and solitary hours. Great men are also apt to have touches of madness; the ideas by which they are haunted, and to whose pursuit they devote themselves, and by which they rise to eminence, has much in common with the monomania of insanity. Striking instances of great visionaries may be mentioned, who had almost beyond doubt those very nervous seizures with which the tendency to hallucinations is intimately connected. To take a single instance, Socrates, whose *daimon* was an audible not a visual appearance, was subject to what admits of hardly any other interpretation than cataleptic seizure, standing all night through in a rigid attitude.

It is remarkable how largely the visionary temperament has manifested itself in certain periods of history and epochs of national life. My interpretation of the matter, to a certain extent, is this—That the visionary tendency is much more common among sane people than is generally suspected. In early life, it seems to be a hard lesson to an imaginative child to distinguish between the real and visionary world. If the fantasies are habitually laughed at, the power of distinguishing them becomes at length learnt; any incongruity or nonconformity is noted, the vision is found out and discredited, and is no further attended to. In this way the tendency to see them is blunted by repression. Therefore, when popular opinion is of a matter-of-fact kind, the seers of visions keep quiet; they do not like to be thought fanciful or mad, and they hide their experiences, which only come to light through inquiries such as these that I have been making. But let the tide of opinion change and grow favourable to supernaturalism, then the seers of visions come to the front. It is not that a faculty previously non-existent has been suddenly evoked, but one that had been long smothered is suddenly allowed expression and to develop, without safeguards, under the free exercise of it.

FRANCIS GALTON.

A CONSERVATIVE VIEW OF THE IRISH LAND BILL.

BEFORE proceeding to analyse some of the details of the Bill, it will be well, I think, in the first instance, to lay down a few general principles, which should always be steadily kept in view, and afterwards to examine how far the present Bill is in accordance with those principles.

Since the report of the Bessborough Commission, and more especially since Mr. Gladstone's speech on April 7th, in which he endorses the opinion expressed by that Commission, it may, I think, be taken for granted that the great majority of the landlords of Ireland are not the rapacious monsters which they have been generally described to be at Land League meetings during the last two years. The Premier's words are "they have stood their trial as a rule, and they have been acquitted," and the words of the Report, supported by overwhelming evidence, are still more explicit; they are as follows:—

"Though the amount of rent was always at the discretion of the landlord, and the tenant had in reality no voice in regulating what he had to pay, nevertheless it was unusual to exact what in England would have been considered as a full or fair commercial rent."

and further on:—

"The credit is, indeed, due to Irish landlords as a class, of not exacting all that they were by law entitled to exact. But their forbearance has been the result, not merely of kindness of disposition, but also of common honesty, which forbade them to appropriate the results of their tenant's labour in improving the soil."

On the other hand, however, it must be admitted, that a certain class of Irish landlords have acted harshly and arbitrarily towards their tenants, so as to justify the following words of Mr. Gladstone: "A strong and conclusive reason for this legislation is, that a limited class of Irish landlords have been distinguished by conduct which has not been the characteristic of the preponderating number of landlords, and their conduct has been described as arbitrary, and many of their proceedings as harsh and cruel."

The first principle, therefore, which, in my opinion, should be laid down, as an inference from these two facts, is this, that the changes to be made in the law should be such as may be necessary to coerce the latter class of landlords to do what it is now admitted that the great majority have hitherto done, and that the former class of landlords should not be punished for the sins of their brethren, at least in a pecuniary point of view; that if it be necessary, as I con-