

until March 10th of this year, when Mr. A— was again thrown from his horse, falling violently upon a hard road. He received a severe scalp wound, and was much shaken. Upon examining the swelling in the thigh, it was found to have become quite flattened, and driven in, as it were, upon the deep structures of the thigh, and for a fortnight Mr. Court thought it would remain so; but gradually it resumed its former shape and size, and in June, 1882, it was as large and prominent as it was twelve months ago. He can ride without any pain or trouble, the only inconvenience being a feeling of weakness in getting his leg into the stirrup.

On Sept. 20th, 1881, when Mr. Court brought this patient to me, there was a mass as hard as bone, and of the size and shape of a man's thumb when the last phalanx is fully flexed, situated at the inner and upper part of the right thigh—i.e., where the thigh joins the pubes and perineum, and over the origin of the long adductor muscle. It could not be made to move, and when seized between the finger and thumb gave me the impression of being connected by its own convex border with the body and ramus of the pubis. I was informed that it had been diagnosed by another surgeon as a portion of the pelvis fractured and displaced from its position beneath Poupart's ligament, downwards and inwards towards the perineum. But the condition of the patient when first seen after the accident, no less than the outlines of the pelvis months afterwards, was completely at variance with this opinion.

CASE 2.—A gentleman, aged forty-three, was sent to me by my friend Dr. Murray of Weymouth-street, on November 22nd, 1881, on account of an injury received whilst riding ten days previously. The horse reared, and the rider suddenly gripping him felt something give way, and then immediately experienced a sensation as of something warm trickling into the flesh near the right groin. Much swelling and discolouration of the skin of the thigh and groin quickly followed, but had in great part disappeared before I was consulted. There still remained, however, some swelling near the junction of the thigh and perineum over the upper end of the long adductor tendon. Tenderness was caused by pressure, and severe pain was felt when the adductors were put into action. I ordered a spica webbing to be worn, which was made by Mr. Hawksley, at my direction, so as to resemble the body portion and one thigh, cut short, of a pair of drawers, padded softly over the origin of the adductors. I also advised the patient to abstain from horse exercise for a few weeks. No other treatment was requisite.

THE RIDER'S SPRAIN.

By EDWARD HENDERSON, M.D., F.R.C.S. EDIN.

WHEN riding across a small water jump in the country, in the neighbourhood of Shanghai, the muscles on the inner side of my right thigh seemed suddenly to give way, and this sensation was attended by pain of so acute a character that I was for some minutes with difficulty able to retain my seat in the saddle. On dismounting I found myself at once in a position of comparative ease, and soon discovered that, while a good deal of continuous dull aching was felt along the inside of the thigh, really acute pain only attended movements of adduction, such as are necessary to retain the seat securely on horseback. There was considerable tenderness along the course of the long adductor, and acute pain was experienced when pressure was made on the tendinous origin of that muscle, which had clearly been rather severely sprained. I am now (at the end of a week) almost free from pain in walking, but am still quite unable to ride.

This accident, which I have termed "rider's sprain," is, it would seem, of constant occurrence, and well known to horsemen. I have myself seen or heard of many cases of varying degrees of severity. The pain experienced at the moment of its occurrence is generally of a very acute character. One gentleman who sustained this injury when galloping, fainted after dismounting; the inside of his thigh became subsequently much discoloured, and he was for many weeks unable to mount a horse. Another showed such signs of collapse that

his companion, a surgeon, supposing he was ruptured, wisely made the necessary examination on the spot. The point of greatest tenderness is apparently in all cases in the upper and inner part of the thigh, directly over the tendon of origin of the adductor longus muscle; but it is not, of course, to be supposed that the sprain is necessarily confined to a single division of the muscular mass concerned in the movement of adduction. A man who has once sustained this injury at all severely is liable to its recurrence, and in a few cases permanent weakness is left behind. In one example which came under my notice the sprain, a tolerably severe one, recurred twice in the same thigh, with an interval of some years. In another, the particulars of which were narrated to me, permanent weakness resulted, the sufferer being compelled to give up horse exercise entirely. We suppose here that the accident may occur more frequently in riding China ponies than with full-sized horses, on account of the difference of grip. A horseman who mounts a China pony for the first time usually experiences a sense of insecurity arising from the comparatively narrow clasp of his legs, and the small size of his mount in front of the saddle. When the rider and his horse have warmed to their work in crossing country, the accident seems less likely to occur, being more commonly met with when a fence or water jump is taken in cold blood, or at the beginning of a run; hence it is that this sprain is so frequently complained of as arising from an apparently trifling cause. Some awkwardness in sitting or some unexpected movement of the horse is at the bottom of most cases. Time and rest will of course cure the greater number of these cases, but, in addition, a broad elastic bandage firmly applied over the upper part of the thigh and secured by a figure-of-8 turn round the waist is, as I have myself found, of very material assistance at first in locomotion. A sporting friend tells me that stirrup leathers are sometimes used to support the injured muscles; they are turned twice round the upper part of the thigh and buckled on the outside; men who have once suffered from such a sprain, carrying their spare leather in the country in this way as a protection against a recurrence of the accident. The stirrup-leather can, of course, be easily slackened or tightened to suit the convenience of the wearer. A broad piece of girth-strap with double buckles would give a better support, and would have the advantage of some degree of elasticity. Doubtless the surgeon's instrument makers at home have been often called on to supply suitable supports in these cases.

I should myself like much to know whether the accident is really as common as I am at present inclined to suppose it, and whether the peculiar seat of the cavalry soldier increases or diminishes his liability to this form of sprain. Sprains of the quadriceps extensor muscle are specially referred to in some surgical text-books, but I have not yet come across any special notice of the same injury affecting the triceps adductor.

Shanghai.

MOTOR DIATHESIS OF THE SECONDARY PERCEPTIONS.

By BRIGADE-SURGEON T. OUGHTON, A.M.D.

SECONDARY perceptions are the subjective indices of the primary qualities existing in external entities—viz., position (distance and direction), dimensions (superficial and solid), magnitude, and motion. Irrefragable evidence has been offered by the eminent Locke, proving these qualities to be primary as affixed in natural objects; but he has failed in a recognition of the fact that, in the sensorial transformation from actualities to phenomena, the not infrequent crosswise action is now in exercise, whereby their mental equivalents can only be regarded as being secondary—that which is primary in the object becomes secondary in the perception. Neither will it be amiss to consider that here is precisely the block of error on which several systems of philosophy have stumbled, noteworthy among them being the ideational hypothesis of Berkeley and the intuitional conceptions of Kant. Medical philosophy scouts the Berkeleyan notion that the world is purely mental dynamics, neither does it accept the modification of Kant that the products of special

sensation are *à posteriori*, whilst those of extension and form are *à priori*—i.e., intuitions in a pre-existent mind. Rather is the foundational basis of our philosophy comprised in Locke's dogma, that the brain is a "tabula rasa" at birth, and mind (spirit excluded as appertaining to the province of faith) is a sequence of the interactions of physical and vital forces. Thus we proceed with our duties relying on the realism of externalities; objective experiences may float past the senses and leave even memory out of sight, but none the less have they been realistic episodes in the phenomenal history of time.

Primary perceptions *pari passu* are the subjective indices of the secondary qualities of external entities, such as colour, temperature, &c. These statements may be verified by annexments as follows:—Special perceptions of secondary qualities are primary in point of development, for the organism of special sensation is fully equipped at birth; but a recognition of the geometrical features of objective nature is a slow acquisition, requiring the motor experience of months or years for its perfect expression. Taking a solitary instance of each class of perceptions, every obstetrician must have sympathised at some time with the keen disrelish of the new-born infant for its cool atmospheric bath; and many of us know that a chicken will seize a grain of barley immediately on exit from its shell. In the latter case, however, we cannot argue from the chicken to the infant excepting on the datum that this will grasp a crumb of bread and feed itself. (Of such kind is the absurd generalisation of those affecting horror at the cruelties practised on a decapitated frog, because it purposively removes a drop of vinegar that is stinging its nether extremities.) Locke is evidently at one with us in the gradual acquirement of the perceptions of primary qualities by his admission that sight restored from congenital blindness would be unable to distinguish between a triangle and a square; still, as we observed before, he has failed to identify these perceptions as being of a secondary nature.

Special perceptions are also primary in point of importance, seeing that they may operate independently of the presence of secondary perceptions; the latter, for instance, are absent in the olfactory and auditory senses. None would hesitate to admit that the qualities of direction, distance, size, or form are wanting in odours; but it is otherwise with sounds. Some would grant that size, form, and motion were wanting in the appreciation of sounds, whilst they might be sceptical about the direction and distance of sounds; yet a careful attention must lead to the conviction that sonorous directions and distances are delusional perceptions, that they are judgments based on the comparison of differences in sonorous intensity, and that such judgments are oftentimes erroneous. Regarding the case of direction, if one should attempt to guess the direction along which an approaching carriage is proceeding, whether from right or left, he will find his guesses by no means invariably correct. I have heard the whistle of a distant train at a railway station, and inferred that it was coming along one pair of lines, but the train has presently made its appearance on the opposite pair. So, with sonorous distance, the ear cannot be said to perceive it in the light of a stationary ventriloquist throwing his voice to all conceivable distances, and, we might add, in every possible direction. But, to continue the argument, secondary perceptions are not independent of the primary—that is, directions and distances, sizes and shapes, &c., cannot be perceived in the absence of an objective. When the biceps is contracted into a hard cord the active cohesion of the sarcois elements communicates no sense of weight in the absence of a felt resistance. So, similarly, on rolling the eyeballs in darkness no visible notion of direction or motion is experienced, excepting as attached to the dim spectra of retinal irritation; and, in the sense of touch unaided by sight, the position of the limbs is determined by a certain indefinite increment of temperature (the true primary sense of feeling) being present, or if not by a memorial comparison. A clearer test on this point is furnished by the faculty of articulation; no evidence of direction, &c., is elicited by the voluntary contractions of the tongue, because the air in contact therewith is impalpable and of an even temperature. Hence, that which is essential is primary, and that which is an adjunct is secondary.

The preamble has been a lengthened one, but not more so than the complication of the subject has demanded; it has been necessary to define and justify the titular phraseology "secondary perceptions," by indicating that primary

objective qualities are the equivalents of secondary subjective qualities, and to note the error that has crept into mental philosophy by Locke's almost culpable disregard of the fact. Neither should it be overlooked, as regards the latter point, that perceptions are only to be construed as being primary and secondary in their mutual relationship as physiological functions, and that both varieties of perception are secondary in their relation to objective qualities. Herein, then, consists the basis of a sound realistic philosophy, and I desire to show—(1) that the organism (muscular) of the secondary perceptions is correlated to the mechanical forces of nature in like manner as that of the primary perceptions is correlated to the sense-essences of nature; (2) that sensorial streams of the primary qualities are transmitted centripetally through the channel of motor nerves in like manner as those of the secondary qualities are transmitted centripetally through sensory nerves. This being done the *modus operandi* of the process must remain for future research, both experimental and logical; query—(1) in what degree is the formative force of natural cohesion correlated to the vitalised cohesion of voluntary muscular contraction; and (2), admitting the correlation, is such vitalised cohesion idealised into the secondary perceptions, by means whereof sensorial form is conformed to natural form?

It must be impressively maintained, firstly, that perceptions are divisible into the two distinct classes of primary and secondary; there is the same *raison d'être* for the classification as for that of the qualities of bodies. The secondary perceptions have been very strangely slurred over by physiologists. Where do we read that the deltoid and superior rectus originate upward ideas, or the biceps cubiti and internal recti ideas of proximity? How does it happen that the said perceptions are apt to be treated metaphysically instead of physiologically, except it be on the unwholesome lead of Locke which insinuates indirectly that they are of a primary nature and therefore, perforce, mentally intuitive. But, concerning classification, note the following words of this philosopher: "There is no discoverable connexion between any secondary quality and those primary qualities that it depends on." He continues—and observe how he mixes up qualities and perceptions—"We are so far from knowing what figure, size, or motion produces, for instance, a yellow colour, or sweet taste, or a sharp sound, that we can by no means conceive how any size, figure, or motion can possibly produce in us the idea of any colour, taste, or sound whatsoever; and there is no conceivable connexion between the one and the other." One inference only is justifiable from this premise—namely, with two sets of perceptions must be adequately conjoined a duplicate nervous instrumentation; the retina can no more perceive direction or visual form than light can *per se* be shaped or assume a specific direction, and *eodem modo* the muscular contraction of volition can in no wise be productive of a sensation any more than a given shape, size, or motion, can *per se* originate light, temperature, or the elasticity of sound. We recognise the fact that special nerves are the channels of primary perceptions; where else, then, shall be discovered the second distinctive and instrumental innervation of perception saving in the motor nerves?

A very good rough method of inculcating that the secondary perceptions constitute a class by themselves and are generically akin, that one form of nervous instrumentation suffices for their excitation, and that such instrumentation is motor in its nature, is comprised in the consideration that "each and every" phase of this class of perceptions is expressible by means of straight lines. (a) Drawing a straight line points directly to a motor causation for the perceptions of motion, of direction (that of the line), and of distance (the length of the line). (b) Describing any configuration, as a hexagon, reveals the instrumentation of the perception of shape, and the varying extension that may be bounded by any such configuration furnishes a clue to the agency of apparent size. (c) An angle indicates the profile of a relief, and the relief becomes real on rotation of the containing superficies about a vertical line. Euclid's point is not a metaphysical conception, but the residuum of an antecedent muscular precept; the point has position, being significant of an appreciated direction and distance. Neither is there aught of intuition in any problem or theorem of geometry; these are taught but the refined adjustments of precedent muscular experiences.

Thirdly, the gradual acquisition and development of these perceptions impress the conviction of their motor origin, which is sufficiently patent in the analogous

acquirements of articulation and ambulatory progression. All observation confirms their gradual acquisition, from Cheselden's youth restored to sight to Charles Bell's note that an infant cannot realise the pain of an abdominal blister. The powers of primary perception are intuitive; but a muscular education is necessary for the identification of the roundness of the solar disc, the magnified resultance of vision, the length of the arm, or the difference between a picture and a solid reality. Coupling in this behalf the facts that shapes are acquired perceptions, and also the chief originating elements of the signs of intellectualism, we may conclude that the radical principle underlying a soundly educated mind resides in a due admixture of sports and study. In a hygiene of intellect the art of drawing (mainly perspective) should be recommended, and instruction of the schoolboy in modelling and sculpture, if practicable, would develop the more realistic perception of relief; but pre-eminently let alternate exercise for mind and body be strictly enjoined, and on an unwavering principle that man's intelligence is in the main founded on his muscular organism in its conjunction with a suitable mechanical configuration.

It is essential, again, that the distal terminations of the nerves of special sense should be mobilised by muscular contraction for the production of secondary perceptions. The vestibular sac is immobile between the cochlea and the semi-circular canals, and no muscle plays directly on the Schneiderian membrane; hence, the absence of this class of perceptions in the auditory and olfactory senses. It may be suggested here that the auricles of some animals are volitionally mobile; truly, but no pure sonorous perception of direction is generated thereby, and the result is an inferential perception such as we gain concerning the direction of an odour by turning the head towards its source. The mobility of the tongue is associated rather with articulate speech than with objective impulses; nevertheless, very keen directive and distal perceptions reside in this organ. It is in the senses of sight and feeling that each and every secondary perception is manifest in full exercise; further, the similitude existing between visible and tangible signs is to be referred to the volitional instrumentation that is common to these senses. Bishop Berkeley differs from this position, for he says—"Visible ideas are the signs of the tangible, not by means of any similitude between the one and the other, nor by any natural principle; but having found them constantly conjoined, as the sounds of a language are with the things they signify." His statement is unreliable, for the said ideas are not immutably conjoined, as is language with thought; the tangible sign is a fixed one, whilst the visible sign varies with the position of the visible body, and the discrepancy is adjusted by a mutual tutoring of tactile and ocular motor experiences.

A few anatomical dispositions may be noted, lastly, which illustrate the dependency of these perceptions on a muscular mechanism—1. No voluntary muscle crosses the median line of the body. This disposition may be interpreted as pointing to the necessity for a neutral line of departure being available wherefrom dextral and sinistral perceptions may date their site of origin. 2. Corresponding articulations are paired on the same level; otherwise double touch would be a constant concomitant of the sense of feeling. Thus, unequal segmentation of the arms would cause a tangible object to be perceived at non-corresponding distances or heights. So, analogously, the orbits are deposited on a horizontal level to prevent a quadruplicate displacement of visual spectra; with the eyes mounted on separate level-lines there must co-exist a vertical, in addition to a horizontal displacement, and with what result? It is difficult to conceive of quadruple vision in the absence of four eyes, and the spectra of double vision would probably, in the case alluded to, hold a variedly oblique relation to each other, instead of a constantly horizontal relation, as with normal binocular vision. 3. The ocular recti stretched away from the eyeball forms a perfect Roman cross, clearly in subjection to the exigencies of vertical and horizontal qualities. 4. Muscles passing over two or more articulations effect the selfsame directive perception in the segments concerned in their contraction; the extensor digitorum longus, for example, produces an upward idea whether in extending the toes or flexing the ankles.

Isolated contradictory evidence is of little moment in the enunciation of general truths. Such evidence crops up only too frequently in the study of perceptive experiences, nor would these be the puzzles they are admitted to be without them. It may be urged that certain muscles have multiple

and incongruous uses, which are inconsistent with their being the agents of directive perceptions; thus, the fan-shaped pectoralis major does not present the simplicity, as a directive agent, of the straight ribbon-like ocular muscles. But the sound principle of the present argument, additionally corroborative of my stated views concerning erect and single vision, is not to be overthrown by a trifling obstacle of this nature; perception has reference to general results rather than to special muscular adjustments, and one of these results indicates that directive phenomena are affected by muscles influencing one another as well as by the mechanical arrangement of their constituent fibres. Herein I have attempted to show that the perceptions of space are secondary to those of essence, and also secondary to and determined by the elements of objective space operating on a sympathetic motorial machinery. It is confessedly difficult to comprehend the crass blindness of metaphysical philosophy in the light of the foregoing matter of physical and physiological fact.

Forest-hill.

A NEW HÆMOSTATIC AND SURGICAL DRESSING.

By EDWARD THOMPSON, M.B.,

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SOME months since, at one of the quarterly meetings of the north of Ireland branch of the British Medical Association, I directed attention to the use of the puffball as a hæmostatic and surgical dressing. My attention was first directed to this substance by the Rev. Dr. Discon, the respected rector of the parish of Beragh, who told me that by its means the life of a poor woman, who had suffered for a long period from an open cancer of the right breast, had been preserved for years, and her sufferings much mitigated. I visited this patient, and ascertained that she had tried almost every form of surgical dressing without being in the least relieved either of her sufferings or the constant hæmorrhages which weakened her. In despair she sought the aid of a country quack, who suggested the use of the puffball, or, speaking technically, the *lycoperdon gigantium*, which grows close to the roots of trees in some of our woods, and which, I believe, has gained a solid reputation amongst the country folk. From the day the patient commenced the use of this substance her sufferings were greatly mitigated, and she improved in health and strength. The frequent bleedings ceased, and the foul odour from the sore was greatly diminished; indeed, so admirably did the puffball act, that the poor woman lived in comparative comfort for seventeen years after the first appearance of the cancerous ulceration. But not only does the *lycoperdon gigantium* possess those important styptic properties which would be in themselves more than sufficient to commend its use to surgeons, but it is also a most soft and comfortable surgical dressing, and the powder it contains seems to possess antiseptic and anodyne properties. The puffball is, when mature and fit for use, almost as large as a man's head; it is enclosed in a thin capsule which must be removed, it can then be torn in pieces and used either as a styptic or for applying any required surgical dressing. The puffball undoubtedly possesses the qualities here claimed for it, and this I assert positively (although we live in an age of scepticism), both from my own experience and that of others. It is, however, its hæmostatic properties that seem to me to be so especially valuable; it has the power of stopping instantly even the most violent external hæmorrhages upon which iron, matico, turpentine, &c., have exercised their properties in vain.

Mr. Fagan, the leading surgeon in Belfast, told me a very short time ago that when removing a large tumour from the neighbourhood of the orbit, he encountered the most violent hæmorrhage from large arteries in the bone, which of course he could not tie, and which even pegging with pieces of wool failed to control, yet a small piece of the puffball at once restrained all bleeding. Dr. McKeown has also used this substance, and although he denies that the puffball has any antiseptic or anodyne properties, he fully concurs in the opinion a number of north of Ireland surgeons have formed as to its complete success as a hæmostatic. I have thus briefly directed attention to this most useful substance, in the hope that some of our leading surgeons will use the puffball, and ascertain for themselves its great utility.