

on the subject of "regeneration," that before I ceased my work I found there exists a method that should be of value when, from accidental causes, degeneration is threatened.

It is acknowledged, from causes not yet explained, that it is only in a small percentage of cases that inoculation of the calf with small-pox virus is followed by a crop of vesicles. Nevertheless, in certain instances, whilst no local eruption is found, constitutional disturbance occurs, and is exhibited by fever and various skin conditions that I need not here detail. If an animal that has undergone this modified form of variolation be inoculated with animal vaccine, there result vesicles abnormally slow in their progress, but of perfectly typical character. Lymph so gained, when transmitted, is found to be fully regenerated, and is highly active. In these two facts—which I verified repeatedly—lies, I think, the possibility of some explanation of the true nature of vaccine at the hands of the bacteriologist.

### ON THE NIPPLE REFLEX.

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ERECTION of the nipple was formerly ascribed to vasomotor action, and to the engorgement of erectile tissue with blood. At present physiologists assign a very minor part to vascular engorgement and a prominent part to the contraction of the unstriped muscle of the nipple. To quote from the most recent edition of *Quain's Anatomy* (vol. iii, part 4, p. 286):—"The tissue of the nipple contains a large number of vessels, together with much plain muscular tissue, and its papillæ are highly sensitive. It becomes firmer and more projecting from mechanical excitement—a change caused by contraction of the muscular fibres, which form concentric circles round the base of the nipple, and radiating bands running from base to apex." Playfair writes:—"When the nipple is irritated it contracts and hardens, and by some this is attributed to its erectile properties. The vascularity, however, is not great, and it contains no true erectile tissue; the hardening is, therefore, due to muscular contraction."

I wish to draw attention to a simple method by which this reflex action of the nipple muscle may be plainly demonstrated. A marked reflex contraction of the subcutaneous muscular layer of the nipple and areola can be excited in the following way. With the finger and thumb of one—or, better, of both hands—grasp the nipple and areola, and compress them for a few seconds as firmly as is consistent with the avoidance of pain. Contraction will take place during the following minute. It will be noticed (1) that the areolar tissue becomes wrinkled, corrugated, and reduced in area; (2) that the areolar glands become more prominent; (3) that the nipple becomes more erect and prominent; (4) that the tissues are harder; (5) that there is often puckering around the nipple in the secondary areola and in the adjacent skin of the breast. The contraction soon passes off, and the reflex can be repeated. I have observed this reflex slightly marked in girls before puberty, and even in males. I have found it well marked in young women after puberty, in pregnancy, in lactation, in non-pregnant multiparæ, in women who have passed the menopause, also in patients who are unconscious through the administration of anæsthetics. It is specially obvious when the mammæ are functionally active, but I have never failed to elicit some degree of reflex after puberty. The shape of the contracted areola varies partly with the direction in which the nipple has been compressed. The phenomenon is specially well seen in women who have had several children, and who have large flaccid areolas with scarcely prominent nipples. On exciting the reflex the areola quickly contracts, showing all its glands, the nipple rises up well defined and erect, and the skin of the mammæ all round the nipple is slightly wrinkled.

When lactation is active milk may be ejected from the ducts through the simultaneous contraction of the muscle which surrounds them. During the act of suckling the infant's lips and gums, by compressing the nipple, excite nipple reflex. At the same time during suckling there is increased activity of the gland secretion and increased vascu-

larity in the gland, for it is at this time that the vasomotor element comes more into action.<sup>2</sup> Some degree of nipple reflex is also excited by cold. No doubt many medical men, as well as many mothers and nurses, are familiar with the contraction thus caused by squeezing the nipples, but it does not seem to be fully described in textbooks. For instance, in Osler's admirable *Principles and Practice of Medicine*, published last year, there is a very full table of the various spinal reflexes, but nipple reflex is omitted. Yet if anyone will make observation on a dozen female patients he will see that this nipple reflex is a phenomenon as constant and as marked as almost any reflex in the body. It will be interesting to study its pathological relations in diseases of the nervous system and in local mammary disease.

My attention was drawn to the subject in clinical gynecological work, where one has so frequently to examine the mammæ in relation to the diagnosis of early pregnancy, when the fact that fluid can be obtained from the nipples is, within certain limits, a valuable clinical sign. Conversation and correspondence with various authorities lead me to think that it is worth while to make this communication to the profession, and I hope I may thus obtain information from other observers, which, with any references to the literature of the subject, will be most welcome. Professor Michael Foster has been kind enough to refer me to articles by Eckhard<sup>3</sup> and Röhrig.<sup>4</sup> These refer incidentally to nipple reflex, though not very fully. These authors seem to take it for granted that erection is due to the contraction of plain muscular fibres, and little part is assigned to vascular engorgement.

### DERMATITIS CAUSED BY ROENTGEN X RAYS.

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A GENTLEMAN, aged about 35, having symptoms of renal calculus, was exposed to x rays to determine, if possible, the presence or absence of a stone. On May 22nd, 1896, the first exposure took place; it occupied one hour. To produce the current five cells were used at first, and later five more cells were added. The patient had on an inside thin woollen vest and a linen shirt: a penny was placed for localising purposes on the photographic film, which was applied to the back in the kidney region. The tube was in front of the middle of the abdomen, distant from one to two inches, a celluloid plate intervening between it and the patient's clothing. About three hours after the exposure was over the patient felt some nausea, but set it down to the stuffy smell of the laboratory, and thought little of it as he occasionally suffered from attacks of so-called biliousness. The plate, on being developed, not proving very satisfactory, he was again exposed, six days after—namely, May 28th, this time for an hour and a-half, the details mentioned above being the same on this occasion, except that ten cells were used from the beginning. The current also was occasionally momentarily reversed. After the patient left the laboratory he again felt great nausea, and soon felt so weak that he had to get brandy on his way home. Next evening he noticed the abdomen slightly red, as if sun-burned; a patch about 1½ inch square, just below the umbilicus, being redder than the rest. This part was that exactly opposite the platinum plate in the tube. There was no itching nor pain. The third day the redness was more intense; on the fourth some very small vesicles appeared; these very slowly increased in number and size during the next few days. This was looked upon as a simple eczema and treated accordingly. The vesicles increased to large "blebs" and became ruptured; there was, however, no pain or itching, the patient going about his usual occupation and riding a bicycle.

On June 14th, eighteen days after the second exposure, I saw the sore for the first time. It had begun to cause a great deal of discomfort from the abundant discharge pouring from it. I found a patch 7½ inches across by 8¼ inches long, extending from the ensiform cartilage to about two inches below the umbilicus. It had all the appearance of an acute

<sup>2</sup> Landois and Stirling, *Physiology*, p. 345.  
*Beiträge z. Anat. u. Phys.*, 1, 12 and viii, 117.]

<sup>4</sup> *Archiv f. path. Anat.*, 1876.

irritative eczema, with exfoliated epidermis, and a profuse sero-purulent discharge. When the sore was cleaned it had a smooth, glazed, pink surface, quite level with the surrounding skin, very sharply defined, scarcely a trace of inflammatory redness extending beyond its edge. It was painless and almost insensitive. There were no granulations, as apparently only the cuticular layer was lost, having a surface exactly like that seen when the cuticle is rubbed off a dissecting room subject, except that it was a bright pink colour.

Almost everything that could be thought of, in the shape of lotions, creams, powders, was used to try to check the copious serous discharge and get it to heal, but they were absolutely of no avail, being literally washed or floated off by the discharge. However, in about ten days the exudation began to lessen: the epithelium began to grow in from the edge, exactly as in a burn, and it was soon seen to be creeping up from the bottom of the umbilical recess. I at once commenced skin grafting, but though from from six to ten grafts were put on almost every day, comparatively few "took;" whether this was due to the constant motion of the part from respiration or not I cannot say. None lived in the central part. Healing steadily progressed till the last week of July, when the sore was reduced to an irregular patch about 3 by 3½ inches, lying just above the umbilicus. After the healing process commenced it, for the first time, became painful, and was very sensitive to various applications. Boric lotion caused considerable burning, and even a very weak ointment of salicylic acid could not be borne at all. When healing ceased it remained very irritable, the surface became grey and gradually covered with a thick semi-translucent material that could not be washed off, and which almost exactly resembled boiled white fish skin. On August 9th the whole sore was deeply cauterised with solid nitrate of silver, some days after a thick slough separated, but the surface underneath was grey and showed no sign of granulations. It gradually became covered with a thick false membrane, not like the previous one but tough, yellow, and opaque, and there was no tendency to heal. On September 2nd the patient was again put under ether, and the sore was scraped till a bleeding surface was obtained, and then the actual cautery applied freely to the whole. Since this operation no slough has separated, the charred surface came away in particles, leaving a thick leathery insensitive false membrane underneath. In this state it is at present, sixteen weeks after exposure to the x rays.

From the position of the sore the patient's condition was uncomfortable in the extreme. Most of the time he had to remain in bed with a cradle over the abdomen, otherwise no dressings or applications could be used. During the treatment he had a severe renal attack, which necessitated the use of morphia. All these conditions, with the actual pain suffered, the mental worry and anxiety, brought about a condition of general debility, which is, I believe, answerable for the non-healing of the sore, rather than any inherent peculiarity in itself. The patient has lately so much improved in general health that the sore already presents a better appearance, and it will doubtless soon yield to treatment and close in like any ordinary ulcer. I think it right, however, to report the case without any further delay, though incomplete. The only similar case that I have heard of is that reported in the EPITOME, BRITISH MEDICAL JOURNAL, August 15th, 1896.

### A CASE OF CONGENITAL WORD BLINDNESS

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PERCY F.—a well-grown lad, aged 14—is the eldest son of intelligent parents, the second child of a family of seven. He has always been a bright and intelligent boy, quick at games, and in no way inferior to others of his age.

His great difficulty has been—and is now—his inability to learn to read. This inability is so remarkable, and so pronounced, that I have no doubt it is due to some congenital defect.

He has been at school or under tutors since he was 7 years old, and the greatest efforts have been made to teach him to read, but, in spite of this laborious and persistent training, he can only with difficulty spell out words of one syllable.

The following is the result of an examination I made a short time since. He knows all his letters, and can write them and read them. In writing from dictation he comes to grief over any but the simplest words. For instance, I dictated the following sentence: "Now, you watch me while I spin it." He wrote: "Now you word me wale I spin it"; and, again, "Carefully winding the string round the peg" was written: "Calfuly winder the sturning rond the Pag."

In writing his own name he made a mistake, putting "Precy" for "Percy," and he did not notice the mistake until his attention was called to it more than once. I asked him to write the following words:—

Song	...	...	...	he wrote	...	...	scone
Subject	...	...	...	"	...	...	seojock
Without	...	...	...	"	...	...	wichout
English	...	...	...	"	...	...	Englis
Shilling	...	...	...	"	...	...	sening
Seashore	...	...	...	"	...	...	seasow

He was quite unable to spell the name of his father's house, though he must have seen it and spelt it scores of times. In asking him to read the sentences he had just written a short time previously he could not do so, but made mistakes over every word except the very simplest. Words such as "and" and "the" he always recognises.

I then asked him to read me a sentence out of an easy child's book without spelling the words. The result was curious. He did not read a single word correctly, with the exception of "and," "the," "of," "that," etc.; the other words seemed to be quite unknown to him, and he could not even make an attempt to pronounce them.

I next tried his ability to read figures, and found he could do so easily. He read off quickly the following: 785,852,017, 20,969, and worked out correctly:  $-(a+x)(a-x) = a^2 - x^2$ . He could not do the simple calculation  $4 \times \frac{3}{5}$ , but he multiplied 749 by 367 quickly and correctly. He says he is fond of arithmetic, and finds no difficulty with it, but that printed or written words "have no meaning to him," and my examination of him quite convinces me that he is correct in that opinion. Words written or printed seem to convey no impression to his mind, and it is only after laboriously spelling them that he is able, by the sounds of the letters, to discover their import. His memory for written or printed words is so defective that he can only recognise such simple ones as "and," "the," "of," etc. Other words he never seems to remember, no matter how frequently he may have met them.

He seems to have no power of preserving and storing up the visual impression produced by words—hence the words, though seen, have no significance for him. His visual memory for words is defective or absent; which is equivalent to saying that he is what Kussmaul has termed "word blind" (*cæcitas syllabaris et verbalis*).

Cases of word blindness are always interesting, and this case is, I think, particularly so. It is unique, so far as I know, in that it follows upon no injury or illness, but is evidently congenital, and due most probably to defective development of that region of the brain, disease of which in adults produces practically the same symptoms—that is, the left angular gyrus.

I may add that the boy is bright and of average intelligence in conversation. His eyes are normal, there is no hemianopsia, and his eyesight is good. The schoolmaster who has taught him for some years says that he would be the smartest lad in the school if the instruction were entirely oral. It will be interesting to see what effect further training will have on his condition.

His father informs me that the greatest difficulty was found in teaching the boy his letters, and they thought he never would learn them. No doubt he was originally letter blind (*cæcitas litteralis*), but by dint of constant application this defect has been overcome.

BELGIAN CLIMATOLOGICAL CONGRESS.—A Congress of Medical Climatology and Hydrology to be held at Brussels in connection with the Exhibition of 1897 is being organised under the auspices of the Belgian Royal Society of State Medicine. The object is to make known the places in Belgium, with the special advantages presented by each in point of climate, etc., which would be suitable for the establishment of sanatoria.