ment has been acquired. In difficult cases, however, I prefer an anaesthetic, as the examination can be more deliberately carried out, and it also affords better facility for palpation of the abdomen. The one important factor for a successful examination, however, is to ensure the pelvic colon being empty at the time.

Recently one or two letters have appeared in the medical papers, in which it has been stated that there is danger in using the instrument, and that accidents may result. There is not, however, the least foundation for any alarm on this account. Naturally the instrument is not safe in inexperienced or incompetent hands any more than the majority of other special instruments, and it takes some time to learn to use it properly. Accidents have resulted from its use, but, so far as my knowledge goes—and I have, as far as was possible, investigated all the cases that have come to my knowledge—always as the result of an entirely illegitimate use of the instrument. I have personally never seen the slightest harm result from its use, and I have on numerous occasions used the instrument in cases in which the bowel was seriously ulcerated, and also in cases where an anastomosis, or other operation, had recently been performed upon the pelvic colon, for the purpose of investigating the line of union. Although the instrument is constantly being used at St. Mark's Hospital, we have no records of any injury caused by it.

In addition to the commoner forms of colitis already mentioned, there are several other varieties which are occasionally met with, and which it is important to be able to distinguish. A rare but important form is haemorrhagic colitis. This is a variety of ulcerative colitis in which the whole mucosa of the colon becomes soft and spongy, and remarkably haemorrhagic in appearance. It results in profuse bleeding and severe diarrhoea. There is also severe toxæmia, with high temperature. Most of the cases I have seen have been due to a primary infection of the colon with the *Diplococcus pneumoniae*, large numbers of these organisms being present in the stools in almost pure culture. The condition somewhat closely resembles enteric fever in symptomatology, but can be distinguished from it by the fact that blood is present in the stools from the first. The disease is very dangerous, but I have had excellent results from appendicostomy.

There is a form of ulcerative colitis sometimes seen in this country which is often described as chronic dysentery. The patient has usually suffered from dysentery while in the tropics, but instead of the diarrhoea stopping after the disease has run its course, it has persisted intermittently—often for several years. At the time when we see such cases over here they are indistinguishable from those of chronic ulcerative colitis, indigenous to this country, and require the same treatment. No specific parasite or micro-organism is to be found, and they do not react to the ordinary antidyenteric treatment, unless amoebæ can be found in the stools, which is seldom the case. I have performed appendicostomy in several such cases with most gratifying results.

Another rare form of colitis is that due to infection by the bilharzia parasite. This parasite finds a lodging in the walls of the colon, and sets up a very severe and intractable colitis. Such cases are very uncommonly met with here, but are fairly common, I believe, in Egypt.

Most of the interest in colitis in this country centres round the cases of chronic muco-membranous colitis; and, in closing my remarks, I should like again to insist on the importance of not considering this condition as a disease but as a symptom, and in the routine examination of all cases by the sigmoidoscope as a preliminary to treatment.

AN exhibition illustrating the materials and methods of construction of economical forms of sanatoriums, schools, hospitals, and other temporary buildings, will be held in the museum of the Royal Sanitary Institute, Buckingham Palace Road, during January. The exhibition will be open free daily, from 9.30 a.m. to 5.30 p.m., and on Mondays till 8 p.m. The following lectures will be given: On January 15th, at 7.30 p.m., Professor Kenwood, on fresh air; on January 19th, at 4 p.m., Dr. T. D. Lister, on problems of after-care of sanatorium patients; on January 24th, at 4 p.m., Dr. M. Paterson, on employment of patients in sanatoriums; and at 4.30 p.m. on the same day, Dr. D. J. Williamson, on antituberculosis dispensaries; and on January 26th, Professor Ralph P. Williams, on open-air schools.

VICIOUS CIRCLES ASSOCIATED WITH DISEASES OF THE SKIN.*

BY

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THE presence of a vicious circle frequently baffles the dermatologist in his efforts to cure disease, for the reciprocally acting morbid processes aid and abet each other, prolong and aggravate the disorder, and tax the resources of the medical armamentarium to the utmost. No wonder, therefore, that such strong epithets as "eternal," "endless," "highly pernicious," "incurable," "of fatal import," have been applied by various writers to so vexatious a complication.

In this inquiry the following classification of circles associated with diseases of the skin will be convenient, although it cannot always be logically adhered to:

1. Circles associated with inflammatory disorders.
2. Circles associated with parasitic disorders.
3. Circles associated with neuroses.
4. Circles associated with the appendages of the skin—hair, nails, sweat and sebaceous glands.

I. CIRCLES ASSOCIATED WITH INFLAMMATORY DISORDERS.

Eczema.

Numerous circles will be met with in the study of so common a dermatitis as eczema, which may serve as a type of pruriginous disorders. The itching and associated scratching aggravate and may indefinitely prolong the lesion that produced them. Thus McCall Anderson, speaking of acute eczema, says:

Scratching always aggravates the disease and tends to bring out fresh crops of eruption. . . . Often, in mild cases, where there is not much infiltration, the disease is kept up by the scratching alone.¹

Similar correlations occur in chronic eczema, as Kaposi points out:

The attendant itching is usually very severe and induces violent scratching. This acts as a cutaneous irritant and may excite a fresh eczema.²

Kaposi has also called attention to the "endless *circulus vitiosus*" associated with varicose veins of the leg. These veins give rise to itching and scratching, as a result of which papules, excoriations, haemorrhages and crusts are produced. The resulting inflammation and itching lead to deeper excoriations and increased inflammation. Kaposi thus describes the process:

Such a condition of the skin predisposes in a high degree, *per se*, to renewed attacks of inflammation on the slightest provocation; and, since the inflammation again tends to maintain and increase the ulceration, we have here an endless *circulus vitiosus*.³

Varicose ulcers may, as Unna points out, also be complicated by that "incurable *circulus vitiosus*" which is established when chronic oedema of the skin has caused a disappearance of elastin.

Owing to the loss of elastin, the oedematous skin gradually loses more and more elasticity; that is, the spontaneous elastic recoil of the collagenous tissue, displaced by pressure or by movements of the body, takes place more and more slowly and incompletely; the muscles of the skin lose a great part of their action on the skin texture. Thus we have an additional factor, favouring the oedematous swelling of the cutis. By the oedema directly attacking the elastin it interferes with the most important factor in the healing of oedema and induces an incurable *circulus vitiosus*, which terminates in complete loss of resistance of the skin, rupture of the epidermis, and lymphorrhoea externa.⁴

This circle is especially obstinate in what Unna calls "callous eczema" with thick and indurated edges:

This variety of eczema is always complicated by a *circulus vitiosus*. The eczema itches; the itching leads to scratching; the scratching produces and perpetuates hyperkeratosis, and the hyperkeratosis in turn keeps up the itching. By this noxious circle very trivial attacks of eczema, such as the erythemato-squamous or pityriasisiform variety, may be transformed into hard callous eczema, which lasts for the rest of life.⁵

Somewhat similar correlations may complicate other forms of chronic ulceration, as, for instance, that met with in the vulva.

* A paper read before the Reading Pathological Society.

As the inflammatory products from the ulcer reach the lymphatic glands a more or less complete blockage (Ausschaltung) of the gland may result (the functional activity has probably been already affected by sclerosis). The associated lymph stasis will, in its turn, favour hyperplasia of the tissues, while it delays or even prevents the healing of the ulcerating surfaces. In this way a kind of *circulus vitiosus* may be established.⁶

Esthiomène is complicated in much the same way:

The ulceration, with or without attacks of acute lymphangitis, with or without lymphatic obstruction, by degrees induces a chronic state of hypertrophic lymphangitis, a true vulvar elephantiasis. This lymphangitis, in its turn, reacts on the ulceration, which it aggravates, perpetuates, and renders almost incurable.⁷

Morbid correlations may also complicate eczema intertrigo, a disorder which sometimes arises when opposing surfaces of the skin remain long in contact and chafe each other.

In these localities the disorder, beginning as an erythema traumaticum, proceeds by its irritative effects to stimulate the secretion of sweat, which is freely poured out between the adjacent folds of skin, and may there temporarily be imprisoned. The surface, heated and reddened, is also somewhat macerated by the effused perspiration, and the latter, when chemically altered, as it is frequently under these circumstances, adds still further to the original disorder.⁸

The crusts that are so frequently present in eczema sometimes serve a useful purpose by protecting the delicate epidermis. At other times they prolong the morbid action by forming a reservoir in which pus collects. This pus in its efforts to escape further erodes the subjacent tissues and prolongs the malady, acting very much like an irritant foreign body.

In some cases the skin that has been attacked by eczema undergoes contraction, and this may establish morbid correlations. For example, eczema of the lower eyelid often leads to eversion of the punctum lachrymale and to constant lacrymation, which in turn perpetuates the original lesion.

When the position of the lid has thus been altered, the tears flow over the cheek, causing eczema, with thickening and excoriation of the skin, so that a vicious circle is set up, which tends always further and further to increase the deformity.⁹

But the circles associated with eczema may extend far beyond the skin and involve other great systems of the body. Both acute and chronic neuroses may be established and in turn lead to increased local disturbance. Thus Kaposi, speaking of eczema, writes:

The patient may suffer from constant insomnia, from neurasthenia caused by incessant pruritus, and from great loss of serum. General anaemia follows; the skin, too, is anaemic and unduly sensitive. Under these conditions any gastric disorder, or nervous or physical excitement may provoke eczema, while at other times such sources of irritation would do no harm.¹⁰

Apart from neuroses, many illustrations will be met with of that "vicious circle that arises between the cause and effect of eczema." Thus a primary focus may provoke secondary outbreaks in remote parts of the body.

In this way the whole organism may become "eczematous," and the general health suffers. The condition of the blood is altered, and a vicious circle is established, wherein ill health conduces to outbreaks of eczema, and the eczema aggravates the ill health.¹¹

The digestive system is specially liable to be affected, as Sir Malcolm Morris has pointed out:

The irritation of the skin may . . . set up reflex irritation in the intestine, preventing the proper digestion of food. The irregularity of the bowels reacts in turn on the skin, and thus a vicious circle is established.¹²

Urticaria.—Urticaria is another common disorder which is aggravated by scratching.

The wheals are accompanied by intense itching, which causes the sufferer to scratch himself. This scratching gives rise to a further crop of wheals.¹³

Lichen Ruber.—Lichen ruber planus may be quoted as a last example of those pruriginous disorders in which severe itching goads the sufferer to scratch himself, and so intensifies the disease.

In the majority of cases itching is present; at times it is intense, and interferes with sleep. . . . The patient scratches himself, and the usual effects of scratching show themselves. The itching is usually more severe the greater the nervous irritability. The scratching leads to an extension of the eruption, and rows of papules will be found along the linear marks due to the finger-nails.¹⁴

Clavus.—An inflamed corn or clavus owes its persistence and growth to a different circle. For the more its conical apex (that is, the hard core projecting into the cutis) irritates the papillae and nerve filaments, the more do these (on the subsidence of the pressure) become congested. Hence results increased proliferation of epidermal cells and accelerated growth of the corn.

Iodide Eruptions.—A grievous artificial circle has at times been established when potassium iodide has been prescribed for the cure of various forms of dermatitis, and the remedy has itself provoked fresh eruptions. Increased doses of iodide may then be ordered in ignorance of the real cause of the aggravation, and in the hope of curing the very lesions the drug has produced! There can be no doubt that death has sometimes resulted from such lamentable error.

Thus Thibierge writes:

The various lesions provoked by iodide of potassium are often mistaken for manifestations of syphilis. This error of diagnosis leads to further use of the remedy, or even to increased doses. Hence result a persistence and aggravation of the eruption.¹⁵

Again, Brocq says:

When the true nature of the eruption is not recognized, and the physician consequently persists in the administration of the iodide, the cutaneous lesions rapidly increase in number and severity, invade the mucous membranes, and become haemorrhagic. Albuminuria, diarrhoea, and marasmus gradually supervene, and the patient may succumb.¹⁶

The danger is perhaps all the greater from the fact that there is here no such principle as *accoutumance*; one attack of a drug eruption seems to intensify the susceptibility to subsequent attacks.¹⁷

II. CIRCLES ASSOCIATED WITH PARASITES.

A.—Animal Parasites.

Oxyurides.—A familiar illustration of reciprocal correlations due to an animal parasite is met with in the case of children suffering from oxyurides. The irritation at the anus and the consequent scratching lead to portions of the helminths or to their eggs being caught under the finger-nails, conveyed to the mouth, and swallowed by the host. Thence the ova pass into the intestines and rapidly attain sexual maturity. In this way the irritation ensures, by autoinfection, successive generations of the parasite. According to Cabot¹⁸ the oxyuris host infects himself anew almost daily, or even every night.

Scabies.—Scabies may also create a circle through the itching and scratching excited by the acari. The parasite may lodge under the finger-nails, and thus be transferred from one part of the body to another. Such transference contributes greatly to the extension of the disorder.¹⁹ Acarophobia is at times complicated by troublesome correlations.

There are some persons who have recovered from scabies, but who in consequence of the attack and of the treatment adopted are still suffering from a more or less extensive eczema. They will not believe themselves cured, and worry their doctor to order them more and more active treatment. This only aggravates the eruption and the itching, so that the poor sufferer cannot escape from the vicious circle in which he is caught.²⁰

Pediculosis.—Several circles are associated with pediculi capitis. The crawling and sucking of the parasites cause itching and scratching of the infected area. The finger-nails then produce excoriations and effusions, and thus supply further food material for the lice and accelerate their propagation. The louse itself promotes the same result, for when it has satisfied its appetite and withdrawn its haustellum a drop of blood wells up to the surface, thus supplying further nutriment.

Again, the inflammation and tenderness of the affected skin prevents the proper use of the comb. Hence the diseased spot, and the colony infesting it are left undisturbed, and the lice can multiply unhindered. Moreover the cutaneous secretions readily form crusts and glue the hairs together, thus affording a hiding-place for the increase of the parasites. Especially is this the case in those countries where the plica polonica is still in fashion. No wonder that, in Hebra's words, "the lice swarm as if one had disturbed a nest of ants." Lastly, lice may be conveyed from one part of the body to another by means of the nails much as in the case of scabies.

B.—Vegetable Parasites.

These may be subdivided into:

- (a) Fungi.
- (b) Bacterial micro-organisms.

(a) Fungi.

Ringworm.—Some important circles are established when ringworm invades the hairy or the glabrous regions of the skin. For example, if an endothrix member of the trichophytons insinuates itself between the cuticle cells of the hair, it rapidly proliferates, so that in course of time the shaft becomes stuffed with spores. The hair is thus rendered brittle, and readily breaks off. The detached portion with its spores is then free to spread infection far and wide; in fact the continual breaking off of the hair is the means by which the parasite diffuses the spores. In Malcolm Morris's words, "As the fungus grows the hair breaks, and infected fragments are carried to other parts, there to set up secondary foci of disease." Another circle arises when the itching which so often accompanies ringworm leads to scratching and to the autoinoculation of fresh foci. The parasite may be merely lodged under the nails and transferred to another portion of the scalp. Or the nail itself may be invaded by onychomycosis, which in its turn facilitates the inoculation of fresh areas of scalp. The ordinary combing and cleansing of the hair is a means of diffusing infection, and thus leads to further cleansing. Especially is this the case when the hair is washed, since water is a necessity for the nourishment of the fungus. As Sabouraud says:

Any attempt to cleanse the diseased scalp disperses the infective agent and creates fresh points of inoculation. In girls, for instance, the linear tracks left by the use of the comb are indicated by rows of diseased hairs.²¹

When the fungus takes root in the non-hairy skin, it causes dissociation of the epidermic cells, and the debris supplies the parasite with the nutriment necessary for its further growth. The irritation also provokes inflammation and exudation, both of which are favourable to rapid increase.

Similar correlations are established in the case of favus and tinea versicolor. Here, too, the fungus may at times provoke inflammatory reactions as shown by discomfort, burning, or itching. The consequent rubbing or scratching may then inoculate the fungus into fresh areas, there to reproduce a similar reaction. Some fungi require a more favourable soil, a greater warmth and more prolonged contact than others, but the principle remains the same.

Otomycosis.—Otomycosis, an occasional cause of otitis externa, represents another type. The inflammatory secretions excited by the fungus supply a nidus for its further nourishment and growth. The result is a perpetuation of the mischief. Indeed, the disease largely depends on the fact that the fungus increases the discharge, and thus facilitates its own growth.

(b) Bacterial Micro-organisms.

Impetigo.—Impetigo contagiosa or parasitica may be taken as an example. The eruption gives rise to discomfort and itching; the finger-nails rupture the thin roof of the phlyctenae, setting free the serum containing streptococci, which then are readily inoculated into any excoriations the scratching may have caused. Indeed, repeated autoinoculations may cause the disease to persist indefinitely. In the words of Sequeira:

The eruption itches, and autoinoculation is exceedingly common. By scratching and simple contact fresh spots form with great rapidity, and large areas may be involved.²²

Similar correlations are associated with ecthyma, furunculosis and sycosis.

III. CIRCLES ASSOCIATED WITH NEUROSES.

All dermatoses are complicated by a more or less important neurotic element. But it will be convenient to group under a separate heading some neuroses where neither inflammatory nor parasitic factors come into play.

Pruritus.

A familiar example is presented by pruritus, a sensory neurosis which may be independent of local irritation or of pathological changes in the skin. Thus Kaposi speaks of persons in whom the fear of pruritus coming on in a theatre, where there would be no opportunity of privacy, sufficed to excite an attack:

Whether the affection proceeds rapidly or slowly, it almost always culminates in an itching of great intensity. The patient is irresistibly compelled to scratch. . . . In many cases the scratching aggravates the pruritus, makes it more intense, more persistent, and more extensive, by increasing the reflex irritation.²³

In obstinate cases the itching may culminate in what Unna²⁴ calls the "*circulus vitiosus* of scratching and hyperkeratosis," a correlation which has been strongly upheld by Brocq and Jacquet, although other dermatologists believe that a slight eczema or other lesion may start the process. If the scratching has been indulged in for long, a permanent change known as lichenification is apt to follow. This again perpetuates the pruritus, as Macleod has described:

When lichenification is established a vicious circle is set up, for the thickening of the skin irritates the nerve-endings and so keeps up the pruritus, whilst the rubbing which is indulged in to relieve the pruritus increases the lichenification.²⁵

In other cases of long-continued pruritus innervation may be so disturbed as to produce an exaggerated activity of the reflex mechanism of scratching. The habit may persist after all peripheral lesion has disappeared. The condition resembles that occasionally met with in other muscular mechanisms such as blepharospasm, cough, vomiting.

Prurigo.

In prurigo also the neurotic element plays an important part. There has been much dispute as to whether the scratching gives rise to the papules or the papules to the scratching; but whatever the sequence, a circle is established. Thus Sir Jonathan Hutchinson writes:

Prurigo, from whatever cause it may have begun, tends to perpetuate or even to aggravate itself. It causes itching, and the itching causes scratching, and the scratching extends the prurigo, and thus the patient goes on from bad to worse.²⁶

Blushing.

Another circle is associated with blushing—a vaso-motor disorder provoked by emotional disturbance and showing itself by dilatation of the blood vessels of the skin. It is especially common in nervous, self-conscious women. The more self-conscious, the more they blush. The harder they try to avoid blushing the worse they suffer.

IV. CIRCLES ASSOCIATED WITH HAIR, NAILS, SEBACEOUS AND SWEAT GLANDS.

(a) The Hair.

Several circles involving the hair (pediculosis, ringworm) have been already alluded to under parasitic disorders and need not be further dealt with.

Trichiasis.—Abnormal arrangement of the eyelashes, known as trichiasis, may sometimes create correlations owing to secondary keratitis and blepharospasm.

The corneal inflammation causes great pain with photophobia and lacrymation, owing to which the patient keeps his eyes convulsively closed (blepharospasm), and by so doing causes a still greater approximation of the incurred lashes to the cornea, and establishes a vicious circle.²⁷

Baldness.—According to some writers baldness may be dependent upon reciprocally acting factors. Owing to the fashion of keeping the head covered, and of thus depriving the hair of sun, air, and nourishment (especially if a hard-rimmed hat is worn), the hair in the regions most frequently covered tends to atrophy and falls out. Thus Brocq writes:

Persons who keep their head constantly covered with a heavy and tightly-fitting hat lose their hair much more rapidly than those who keep their head uncovered.²⁸

The result is more or less extensive baldness, which in its turn provokes increased use of the head-gear.

Hirsuties.—Hirsuties may lead to an artificial circle owing to the practice of epilation or to the use of depilatories. Neither epilation nor depilatories are of any permanent value. They merely make new hair grow more luxuriantly than the former crop, owing to the increased local circulation and hypertrophy of the papillae. Thus the hypertrichosis leads to epilation, and this to further hypertrichosis.

(b) The Nails.

The nails have more than once been referred to above as sharing in the formation of circles. At times when used to relieve pruritus, they become the carriers of infection, as in the case of oxyurides or of impetigo, and thus serve to start the disease afresh.

At other times the nails directly aggravate the pruriginous disorders they are intended to relieve, as in the case of urticaria and eczema.

Onychogryphosis.—But there are other instances in which the nails themselves are diseased. Thus Heller has drawn attention to a circle that is established in onychogryphosis owing to a keratoma in the nail-bed.

This cushion-like growth, caused by the inflammatory irritation in the matrix, raises up the nail-plate and disturbs its natural growth. This raising of the nail also increases the angle between the matrix and the nail-plate, as this latter emerges from the posterior fold. A *circulus vitiosus* is now established, since the space between the plate and the matrix (owing to the plate being obliquely raised) again becomes filled by the horny growth.²⁰

Ingrowing Toe-Nail.—Other correlations may be associated with onychia, where inflammation leads to accelerated nail growth, and this, in turn, intensifies the inflammation. An illustration is afforded by ingrowing toe-nail, as Sir Jonathan Hutchinson has pointed out.

As soon as any degree of inflammation has been set up, the conditions aggravate each other; the inflamed nail expands and grows laterally against the raw surface, now unable to tolerate any pressure. No doubt, also, as in onychia maligna, the secretion produced is in itself a source of irritation.³⁰

The later stage of the disease is characterized by an enormous development of the sebaceous glands and of the fibrous tissue—changes which reciprocally aggravate one another. The process is similar to that met with in rhinophyma and acne cheloid. Wilfred Fox thus describes it:

The fibrous tissue obstructs further the sebaceous ducts, renders the outflow more difficult, and by stagnation favours additional pustulation, which in its turn produces fresh fibrous tissue, and so a vicious circle is set up.³²

Seborrhoea.—Facial seborrhoea in neurotic persons may at times establish a circle in the following way:

In some chloranaemic and neurasthenic individuals, men and women, facial seborrhoea appears in the form of oily, sweaty drops upon the nose and forehead, not alone after overheating, but also suddenly, as the result of nervous excitement. This vicious circle may lead to considerable mental depression, inasmuch as the patients devote their entire attention to this condition, imagine themselves scrutinized by every one, and dread intercourse with others.³³

Large accumulations of fat and epidermis, due to seborrhoea, are sometimes observed in the retracted depression of the umbilicus. In course of time this mass may become rancid and irritating, thus provoking increased

(c) Sebaceous Glands.

Sebaceous Cysts.—Many circles depend on obstruction to efferent ducts and the consequent accumulation of retained secretions. For example, hyperkeratosis of the outer third or funnel of a pilo-sebaceous follicle may give rise to a comedo-plug, whose presence acts as an irritant and promotes further hyperkeratosis. Sebaceous cysts often arise by a similar process, the accumulation of sebaceous matter causing hyperactivity of the follicular walls and increased accumulation. The same applies to acne vulgaris, where inflammation of the walls of the follicles is probably associated with microbic infection. The increased secretion leads to increased irritation and vice versa.

Acne Rosacea.—Some interesting correlations may be present in acne rosacea, and account for the chronic nature of the disorder. The disease begins with temporary but recurrent angio-neurotic flushing of the skin over the central portion of the face. In course of time these flushes give rise to a network of vascular dilatations associated with telangiectases and acne-like papules, resulting eventually in inflammation of the sebaceous glands. The relations between the telangiectases and the pustules are thus described by Brocq:

A form of vicious circle is established. The inflamed acne favours the afflux of blood to the face, and aggravates the dilatation of the blood vessels; while, on the other hand, the chronic congestion of the skin favours the production of acne and the induration round the base of the pustules.³¹

secretion and accumulation. Seborrhoea genitalium is another example, which arises when, through want of cleanliness, smegma is allowed to collect and decompose. Especially is this likely to happen with a phimotic prepuce. The phimosis causes retention; the retention sets up balanoposthitis and aggravates the phimosis. Thus Corner writes:

The secretion decomposes and irritates both the glans penis and the prepuce, producing a chronic superficial balanoposthitis and a deeper chronic inflammation in the prepuce, causing its fibrosis and subsequent contraction on the glans penis. The meatus in it also becomes contracted, so that it can no longer be withdrawn over the glans, and the secretions under it collect and ferment, producing further irritation. The greater the irritation of the glands by decomposing secretion, the greater the amount of secretion they produce. In this way a vicious circle is established.³⁴

In females a similar condition results if the smegma about the clitoris and vulvar folds is not frequently removed. Decomposition, vulvitis or balanitis clitoridis lead to increased secretion and accumulation.

(d) Sweat Glands.

Hyperidrosis.—General hyperidrosis, when associated with the prostration of serious disease, is frequently the result of debility as well as the cause of its aggravation. In the words of Alfred Sangster:

The nervous excitement and the continued loss of water tend to exhaust the already debilitated patient.³⁵

Some stout persons, in whom the thick layer of fat diminishes the amount of heat given off by radiation and conduction, are much troubled by abundant perspirations. These make the sufferer lazy, and thus tend to increased obesity and perspiration.³⁶ Hyperidrosis of the axillary regions frequently causes women to wear impervious shields, in order to protect their dress from unsightly stains. The shields, however, encourage the retention and decomposition of the secretions, and thus provoke irritation of the skin and further hyperidrosis. Many dermatologists have attributed pompholyx or dysidrosis to disorder of the sweat apparatus, although the matter is still *sub judice*. But, in any case, the associated itching and scratching are both cause and effect of the disorder. As Brocq says:

The patient complains of intense itching and burning. The more he scratches himself the more numerous and the larger do the vesicles become. They seem almost to develop under the fingers at the itching spots as these are being rubbed.³⁷

Retention cysts of the sweat glands may be due to a circle, much as happens in the case of other glands. Owing to its narrow lumen some obstruction or kinking of the sweat duct is readily brought about, leading to accumulation of sweat and cystic dilatation. This may in turn cause further obstruction and further accumulation, until the cyst reaches a considerable size.

THE BREAKING OF THE CIRCLE.

The question may be asked of this study of vicious circles—*Cui bono?* The reply is that we gain a clearer insight into the methods of *natura medicatrix*, and guidance for rational therapeutics.

Although some circles are, as stated above, "endless" and "incurable," there are many others that can be "broken" by natural processes. For example, kerion results from Nature's effort to cure ringworm. The folliculitis may loosen and expel the diseased hairs with all the attached fungus. In fact, as Sabouraud says: "The curability of tinea tonsurans is in direct proportion to the degree and inflammation of the follicles."³⁸ And again:

The suppurative reaction is a curative process because of its expulsive action. As soon as the diseased hair is expelled the inflammation subsides.³⁹

Even the well-linked chain of reactions associated with varicose ulcers may be snapped. The acute pain may confine the patient to bed. The oedema is relieved, the itching subsides, the excoriations heal. Reparative replace destructive processes. Again inflamed corns may be cured without medical aid. The congestion at the base may proceed to suppuration and the entire mass be thrown off.

Many pruriginous eruptions get well in spite of associated itching and scratching. There may be prolongation of the attack, but the natural tendency to repair triumphs in the end.

Generally speaking, however, disorders complicated by a circle are obstinate and difficult of cure. The aid of the *ιατρος πολυπειρος* is indispensable to recovery. The recognition that a circle is present draws attention to the fact that each of the co-operating hostile forces can be attacked. Such recognition conduces to a surer and speedier victory.

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- ¹⁵ *Pratique dermatologique*, vol. ii, p. 487.
- ¹⁶ *Dermatologie pratique*, vol. i, p. 412.
- ¹⁷ Morrow, "Drug Eruptions" in *Monographs on Dermatology* (N. S. S.), 1893, pp. 367, 500.
- ¹⁸ *Modern Clinical Medicine*, p. 551.
- ¹⁹ Mracek, *Handbuch der Hautkrankheiten*, vol. iv (ii), p. 276.
- ²⁰ *Pratique dermatologique*, vol. ii, p. 739.
- ²¹ *Pratique dermatologique*, vol. iv, p. 480.
- ²² *Diseases of the Skin*, p. 149.
- ²³ *Twentieth Century Practice of Medicine*, vol. v, p. 766.
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- ²⁵ Allbutt and Rolleston, *System of Medicine*, vol. ix, p. 298.
- ²⁶ *Lectures on Clinical Surgery*, vol. i (i), p. 30.
- ²⁷ Lawson, *Diseases and Injuries of the Eye*, p. 459.
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- ²⁹ Heller in Mracek, *Handbuch der Hautkrankheiten*, vol. iv (ii), p. 569.
- ³⁰ *Lectures on Clinical Surgery*, vol. i (i), p. 144.
- ³¹ *Dermatologie pratique*, vol. i, p. 831; cf. also *Pratique dermatologique*, vol. i, p. 227.
- ³² Allbutt and Rolleston, *System of Medicine*, vol. ix, p. 697.
- ³³ Kaposi, *Diseases of the Skin*, tr. by Johnston, p. 123.
- ³⁴ *Male Diseases in General Practice*, p. 398.
- ³⁵ *Quain's Dictionary of Medicine*, vol. ii, p. 941.
- ³⁶ L. Krehl, *Clinical Pathology*, tr. by Hewlett, p. 342.
- ³⁷ *Dermatologie pratique*, vol. ii, p. 133.
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EPIDEMIC POLIOMYELITIS OCCURRING AT STOWMARKET, SUFFOLK.

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TWENTY-FIVE cases of this disease occurred in Stowmarket between August 12th and September 18th, 1911. There is some evidence to show that other cases existed at an earlier date, but the presence of the disease in an epidemic form was not recognized until the date mentioned, and no record of any such cases has been preserved.

Distribution of Cases.

In three instances more than one case occurred in the same house.

In one house there were 3 cases, the first appearing on August 12th, the next on August 17th, and the third on August 19th. In two other houses there were 2 cases. In one the first case arose on August 26th, the second August 29th. In the other the first case occurred on September 1st, the second on September 4th. Of the other 18 cases the majority occurred in groups in adjacent houses.

Age Incidence.

Five cases occurred in adults. Of the remaining 20, 3 occurred in infants under 2 years old and 12 in children between the ages of 2 and 12 years.

Mortality.

There were 6 deaths. Four died within a few days of the onset of illness from paralysis of respiratory muscles. Two died in the later stages from bronchitis and heart failure.

Climatic Conditions.

The cases occurred in exceptionally hot, dry weather, when there was a great deal of dust and swarms of flies. Whilst inspection of premises revealed no serious sanitary defects, the exceptional drought accentuated what trifling defects there were, a temporary accumulation of refuse, which in an ordinary English summer would have passed unnoticed, becoming offensive and tending to be the breeding-place of swarms of flies.

Measures Adopted to Cope with the Outbreak.

These were (1) compulsory notification; (2) isolation; (3) destruction of flies; (4) watering the streets with antiseptics; (5) all contacts were instructed to spray nose and throat with permanganate solution; (6) householders were warned against accumulation of refuse.

These measures were put in force early in September. The epidemic ceased quite suddenly, the last case being notified on September 18th.

This sudden cessation cannot be attributed to a change in the climatic conditions, since in the rural districts immediately adjoining cases continued to arise until the end of October. No fewer than 32 cases occurred within a radius of a few miles outside Stowmarket after September 18th.

The value of compulsory notification was emphasized, not only from a public health point of view, but also from an economic standpoint. Before notification exaggerated rumours prevailed, panic was created, and the trade of the town suffered in consequence. At the end of August it was stated in the press that there were 30 cases with 6 deaths. Careful investigation at this time showed that there had been 15 cases with 3 deaths. Before notification uncertainty prevailed; afterwards authoritative statements could be made and public anxiety allayed.

Transmission of the Disease.

Probably the disease was transmitted in three ways (1) By dust; (2) by flies; (3) by "contacts," the organism being carried in the nasal mucous membrane.

The sudden cessation of the epidemic on September 18th is curious, and I venture to think important, as it appears to throw some light on the problem of transmission.

To account for the somewhat dramatic ending of the epidemic in Stowmarket, one of two explanations must be accepted: (1) Either the "soil" was exhausted in this particular area; or (2) the measures adopted were efficacious in stopping the spread of the infection.

As against the first assumption, it may be pointed out that there was no gradual "tailing off" in the number of cases which one would have expected on this hypothesis. During the last week (between September 9th and 18th)