a trephine at these corners. The discs of bone so removed are placed under the portions of the scalp around the flap and so kept until the termination of the operation. The four trephine openings are now united with a Gigli's saw, the cuts being made obliquely upwards and outwards so that the bony flap is larger externally than internally. The whole flap is now elevated and turned outwards. The dura is gently raised from the roof of the orbit until the posterior edge of the lesser wing of the sphenoid is exposed. By this means the greater part of the retraction of the brain is performed with the dura still intact and is thus preserved from harm. When the lesser wing is exposed the dura is opened and very little further retraction will expose the olfactory tract, the optic nerve, chiasma, and the pituitary tumour. Gentle dissection with a Watson Cheyne dissector will usually determine the size and motility of the tumour, and as a general rule this can be elevated from the pituitary fossa and entirely freed and removed. Haemorrhage is not excessive and in no case have I found it necessary to ligature any vessels. If a cyst be present it may be necessary to aspirate it before dissecting out the cyst wall. The tumour having been removed the brain and dura are allowed to drop back into place, the dura is sutured, the bone flap replaced, the four trephine circles are removed from beneath the scalp and put back into place, and the soft tissues are sutured. The operation differs from that of Frazier in that the supra-orbital ridge is untouched, and it is found that by elevating the dura sufficient retraction is obtained to give a perfect view of the pituitary fossa. The trephine circles of bone are replaced at the end of the operation, for if this is not carried out an unsightly depression may persist in the forehead immediately above the root of the nose.

RESULTS OF OPERATION.

My experience includes the following cases:

CASE I.

I. J., female, aged 14, was brought to me on June 14th, 1915, with a history of having had headache for two years, fits for eighteen months, and blindness for seven weeks. She was extremely fat; there were no secondary sexual characteristics.

Operation.—Right frontal approach; orbital ridge divided; cyst with cholesterolin fluid drained.

Result.—Little improvement only. The fits returned, and she died in ten months.

CASE II.

S. B., female, aged 55; seen on October 23rd, 1915. She suffered from severe headache, had bitemporal hemianopsia, occasional diplopia, and later left blindness.

Operation.—Frontal flap; left optic nerve divided; tumour and pituitary removed entirely. The pathologist's report stated the tumour to be a solid acinous carcinoma of the pituitary.

Result.—Six years later the patient was doing well. She regards herself as a marvellous recovery, and is able to do all her work. Vision in right eye good.

CASE III.

M. S., female, aged 50; first seen July 17th, 1916. Symptoms: Headache, vomiting, vertigo, drowsiness, increase of fat; she had bitemporal hemianopsia.

Operation.—Left frontal flap; pituitary and tumour easily removed. Pathologist's report: Excess of acinous tissue containing secretion; probable adenoma.

Result.—Collapse followed the operation, and the patient died the next day.

CASE IV.

S. S., female, aged 42, came to me on January 12th, 1918, with a history of having had changes of vision for seven years; she had bitemporal hemianopsia passing on to blindness, and suffered from vomiting and headache.

Operation.—Right frontal flap; tumour removed, apparently completely. The pathologist's report stated that the tumour was a cuboidal-celled carcinoma.

Results.—The patient collapsed the same evening and died. The post-mortem examination revealed the fact that removal of the tumour was incomplete.

CASE V.

J. S., female, aged 42; seen February 12th, 1921. History of typical acromegaly for seven years, bitemporal hemianopsia, and glycosuria (relieved by medical treatment).

Operation.—Left frontal flap; tumour (a small sphenoidal-celled carcinoma) removed entirely from under chiasma.

Result.—April 28th, 1922: Complete cure; vision nearly perfect; symptoms of acromegaly diminished; no glycosuria; still slight headache.

CASE VI.—Acquired Lorain.

E. P., male, aged 23; first seen October 28th, 1921. Symptoms: Headache, vomiting, loss of appetite, weakness, muscular atrophy; loss of secondary sexual characteristics; bitemporal hemianopsia.

Operation.—Right frontal flap; calcareous tumour (adenoma) removed from beneath chiasma.

Result.—June 5th, 1922: Complete cure. The patient has gained 3 st., and is regaining secondary sexual characteristics. Vision greatly improved; still has temporal hemianopsia.

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MENTAL SYMPTOMS IN PHYSICAL DISEASE.

BEING AN ABRIDGEMENT OF THE BRADSHAW LECTURE
DELIVERED BEFORE THE ROYAL COLLEGE
OF PHYSICIANS OF LONDON,

BY

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THE close relationship of mind and body has long been recognized, but in practice has been largely lost sight of, and the tendency has been to investigate them apart, to the detriment of our knowledge of each. It shows how dominated we are by tradition when we realize that it is customary for a student to pass through his medical instruction in the wards of a hospital with little or no thought given to the mental aspect of the patients he has been observing. It is true that he will hear something of hysterical manifestations, but this narrowed view is misleading, for it is apt to convey to the student that hysteria is the beginning and end of functional nerve disturbance. It is encouraging to learn that the term "mental" is now being generally used when reference is made to normal mind. This has a dual value: it brings the study of normal and abnormal mental states into closer relation, and it emphasizes the fact that both the healthy and the ill man have a mental outlook which should be investigated.

It must be conceded that all physical disease must have a concomitant mental change, just as all mind disorder is associated with variations in the bodily functions. The close interrelation of all the various systems of the body is increasingly emphasized by physiologists, pathologists, and clinicians, and the work done during recent years upon the vegetative nervous system calls for further careful investigation. There is always the danger that the pure clinician will seize upon an explanation which seems to fit in with any syndrome of symptoms with which he is confronted, and the physiologist working in his laboratory is apt to overlook a clinical picture which he never has the opportunity of seeing. Fortunately this is all changing, and in the future we shall see clinical physicians and pure scientists working in much closer relationship.

It is important to try to discover some fundamental principles as to how and why mental symptoms develop in association with physical disease. Since sensation is the most elementary of all conscious processes, and since it is largely upon sensation that we form a knowledge of self, alteration in sensation from whatever cause must give rise to mental symptoms. Sudden and extensive variation in sensation

will give rise to more marked mental changes, but any sub-acute and persistent alteration will be definitely reflected in the mental outlook of the individual. Every organ, and indeed every structure of the body, must be represented in the field of consciousness, but the stimuli arising from them only arouse consciousness of their existence when they are raised above a normal intensity. On the other hand, it is possible to obtain a relative hyperaesthesia by the lowering of sensitivity in the surrounding tissues. Pain—one of the most common changes in sensation—has been regarded from the philosophic standpoint as something of value to the organism and as tending to favour its survival. But pain is not always related, either by its cause or by its persistency, with some definite abnormality of which it is a more or less precise indication of constant value. Pain tends to persist long after the original cause has ceased to operate, and the longer it exists the more difficult it is to relieve. Pain evokes the same physical changes that are aroused by emotion, and the energy that must be dissipated by the mobilizing of these forces must sooner or later lead to exhaustion, which in some persons is more noticeable on the physical side, and in others in changes in the mental attitude.

Apart from severe pain there is no symptom so capable of initiating bad mental habits as discomfort. Tics are all good examples of this, but some of them lead to permanent ill health unless understood and suitably relieved; aerophagy is an instance. During the last decade, and more especially owing to the work of Dejerine, emotion has come to be regarded as one of the most important factors in the mental and physical health of an individual. It may arise from an external or an internal cause. By its suddenness or by its intensity emotion may completely overthrow the equilibrium of the subject who experiences it. This condition may on rare occasions be lasting, though it is more common to have a gradual return to normal self, but this regaining of conscious judgement is by no means even, and is often interrupted by a series of relapses. Even a lesser emotion if it lasts may set up a very definite "preoccupation" which in turn may lead to some mental change.

Every person has his own way of reacting to emotional excitation, and in some instances an external emotional stimulus, such as the shock of hearing bad news, only develops its full potency after being reinforced by internal emotion. A common form in which this type is to be observed in relation to physical disease is when a patient has been told some disquieting news regarding his health or when he may have inferred from some gesture or expression of his medical adviser that his condition is serious. Whether the emotion is severe or slight, if it occasions loss of intellectual control it tends to the establishing of a neurasthenic state, which in turn leads to a lessening of the power of adaptation in the person so affected. In some cases the neurasthenic condition may be complex, but in others it may be limited to the disorder of function of some organ of the body. To this type belong those individuals who develop fears regarding their heart, their lungs, or indeed any organ of the body, and this condition may persist long after the original emotional cause has disappeared and the patient has regained full intellectual control. The ill person is very suggestible, especially towards a morbid outlook, and any remark made by a physician may be so exaggerated and distorted as to lead to a preoccupation of an important kind.

Again, the number of persons who break down either immediately after an operation or some weeks later is larger than some may suppose, and many of these can be traced back to the emotional shock that the individual received when he was told that an operation was necessary. Emotional shock leads to preoccupation, and preoccupation leads to sleeplessness with its resultant nervous and mental fatigue. Highly hypersensitive persons should not be told of the need of an operation long before this is to be performed, and after any discussion of this nature has taken place the sleep of the patient should be carefully watched and sedatives administered if necessary. Also with this class of case violent purging a few hours before the operation should be avoided if possible, as this increases the danger of a nervous collapse with mental confusion after the operation. Crile and Lower conclude that surgical shock is a state of exhaustion which leads to changes in the brain cells, the liver, and the adrenals. They recognize that there is no distinction between emotional shock and shock produced by other means; the clinical phenomena are practically the same; they state that the cellular changes are apparently identical, and that the condition is brought about by an intracellular acidosis.

Many women, especially those in ill health or from some cause in a fatigued state—whether this is from the disturbed sleep so common in the later months of pregnancy or from some stress—are in a highly unstable state by the time that labour begins. The emotion which is always more or less present at this stage may pass the normal limits either from dread of the ordeal which confronts the patient or from the actual suffering at the time the baby is born. Such women should be protected by taking care that the hours of suffering and the intensity of it are limited, and yet too often these precautions are ignored, largely on the false argument that the process is a purely physiological one. An emotional disturbance of this kind may lead to years of ill health even if the patient escapes a severe mental breakdown. Emotion that has once been aroused may not settle down, and it nearly always leaves the person more susceptible to other emotional shocks.

Both physicians and surgeons know how devastating is fear, and how some patients who face an operation or an illness under this influence die without any apparent reason. To remove such fear, if it is possible—and it often is possible—is as urgent as it would be to control persistent vomiting, and yet in practice it is common to see the panic being accepted by the medical attendant in a fatalistic way and evoking nothing more than a regret that his patient is so foolishly nervous. The fearful person can usually be reassured, but he who would undertake to do this will best succeed if he has some knowledge of mind and its working. Some medical men, under the idea that they are bracing up their patient, do infinite harm by their remarks, especially if these include words of reproof. It is true that one fear may for the moment replace another fear, but I need hardly say that this is highly unscientific and is no more a remedy than is a lavish expenditure of sympathy. Fear and anxiety bring about a condition of mono-ideation in which the patient is unable to turn his attention away from the morbid thought which seems to fill his whole mind. If the preoccupation continues, it will begin to interfere with sleep, and Crile found that sleep was the only certain means of restoring the exhausted cells in the brain or liver and adrenals.

As a profession we have become unduly apprehensive of giving hypnotics. Experience has taught me how dangerous is this outlook, for insufficient sleep, especially under certain conditions, is infinitely more damaging than any drug; and as for the danger of inducing a habit by giving a hypnotic, if we omit the morphine and opium group, which should not be given, the risk is infinitesimally small. The physician who puts off prescribing a hypnotic as long as possible is the man who may bring about the habit he so much dreads, for he has by his methods permitted the patient to become obsessed by fear that he will not sleep, and when at last a drug is given and sleep is obtained the patient is terrified by the experience he has passed through of ever again having a sleepless night. Insomnia that is quickly relieved leaves no such memories, neither does it make the patient rely upon any artificial aid.

My experience strongly favours the view that a psychoneurosis may develop into a psychosis; but for the moment the point is that any mental symptoms arising in association with physical disease should receive the consideration that their presence merits. As in other matters of life the proposition is divided into two portions: the facts, or, as it is in medicine, the definite symptoms, and the inference or deductions that we make regarding those facts or symptoms. Now the body in health occasions few if any conscious sensations, and in consequence when they do arise the patient is apt to place his own interpretation upon them, and unfortunately the explanation is too often wrong. Altered sensation may be so severe as to occasion a patient to construct a definite delusion regarding it, but it is more common for him to have some fear as a result. This in turn may set up an emotive state, and this psychic reinforcement, when it occurs, greatly enhances the importance and the severity of the condition. Head has pointed out the varied moods that may arise in conjunction with pain of the reflected visceral type and the superficial tenderness which accompanies it. He states that "although reflected visceral pain seems to be the one universal concomitant of these mental changes in cases of visceral disease amongst sane persons, other factors predispose to their appearance"; but in the cases upon which he based his investigations he rigidly excluded all those in which there was an heredity of insanity or epilepsy. In addition to altered moods Head found that under certain conditions some persons suffering from visceral disease

are liable to develop hallucinations of sight, of hearing, and of smell. He further found in those persons who had visual hallucinations that superficial tenderness of the visceral reflected type was present over the forehead in every one of the cases, whereas in those who exhibited auditory hallucinations the tenderness was present in the vertical and parietal regions. The importance of the condition is not so much the sensory disturbance as the emotion that such a phenomenon may set up in the patient. It does not require a great imagination to appreciate what a disturbing effect these sudden hallucinations may have upon a highly sensitive person, and it is no cause for surprise that the inference that many of them draw is that their mind may be going. As they are sane persons their fear may be quickly allayed when the true nature of the disturbance is explained to them; but the tragedy of the situation is that, owing to the neglect of a systematic investigation of the mental aspect of a case by the general physician, the latter is often not conversant with the phenomena we are describing, and either he is unable to reassure his patient or, what is worse, he conveys to him the doubts that he has in his own mind. Many of these hallucinations are hypnagogic and occur when the patient is in a half-asleep and half-awake state. On the auditory side the sensory disturbances may take the form of tapping, knocking, bells, musical notes, name called, and even at times a few words. It is advisable in these cases to give one small dose of bromide daily to lessen the nervous reflex irritability, and if there is any tendency to sleeplessness this should be promptly relieved by sedatives.

Head states that when visual hallucinations arise in visceral disease the object appears white, black, or grey, never coloured or even tinted. He found that almost every patient felt frightened with the first hallucination of vision, as is usual with the auditory, but that if they were frequently repeated self-control returned. This again must largely depend upon the reassurance that should be given by the medical attendant.

Visual hallucinations may be and are a prominent symptom often of diagnostic value in states of toxæmia; the hallucinations may be only a part of a general altered mental state, for, if the poison is active, the patient usually soon becomes very confused, and may even be delirious. Nevertheless it is important to differentiate these cases from other types of mental disorder, as the mental changes may be very evanescent and pass away quickly when the intoxication is relieved. In such cases the natural resistance may be lowered and the tendency of the patient may be to react by mental changes. It is very necessary to recognize the syndrome of symptoms which arise in these toxæmic conditions—as, for example, their presence may be the first indication of pus.

Mental disorder is not haphazard in character, and the better we understand the grouping of its symptoms the more accurate we shall become in the diagnosis and prognosis of any given case. We are only upon the threshold of understanding the effect of any foreign protein taken into the body, but both clinically and experimentally it is recognized that striking effects may follow quite insignificant doses. It must be borne in mind that the effect may be more physical than mental, or vice versa, and consequently there must be every gradation between the two, and though the bodily symptoms may be the more common it is none the less important to seek for and to note any functional nervous change. Any poison is capable of producing mental disorder provided the person who takes it, by his special idiosyncrasy, reacts to it. The danger of regarding physical and mental disease in separate categories according to which group of symptoms is the more in evidence must be avoided.

Too little heed is given to gesture, expression, and posture. There are well-recognized diseases in which characteristic changes in any one or more of these are noted, and they may constitute important links in the syndrome of symptoms which go to establish the diagnosis of such diseases, but, generally speaking, little or no remark is made about them. Yet gesture language will convey as much as, if not more than, words, for these may be misleading, while gesture seldom is, for the latter is complex and it is the outward and visible sign of inward sensation and emotion. Maudsley, in his book on *Pathology of Mind*, says: "What is mind-reading but muscle-reading through movements so fine as to be discernible only to a practised sensibility?" Physicians of long experience acquire it, but it is a matter of too much importance to be left for time to teach and the observation of the student should be trained to appreciate it. He learns

that physical pain, especially of the visceral type, is shown by the lower part of the face, but the tremor set up by strong and intermittent nerve currents transmitted to the various muscles may be of almost equal importance. The man who can observe can inquire, but he who sees but does not perceive is left in ignorance unless the information is disclosed to him by the patient. Further, even if noted, evidence of emotion, such as tremor and the like, is commonly explained away without any real investigation being made as to whether it should be regarded as a matter of consequence. Persistent disorder of conduct usually leads to further inquiry unless it is decided that it is purely hysterical, but owing to the loose way in which this term is frequently used abnormal behaviour may be wrongly regarded. The conduct may become undisciplined, and with this there may be a general restlessness; this is common in some forms of heart disease, and even more so in exophthalmic goitre. These may be the first symptoms to attract attention, and in any case they should never be looked upon as unimportant. Conduct may be disordered either by overactivity or by underactivity; great muscular response may take place with slight stimuli, or the inertness may be such that even with powerful stimulation the response is small, while between these two extremes stand infinite variations. A change of conduct which originates in the course of some disease may persist after the latter has passed away unless steps are taken to remedy it, for such a change may become a pure habit. If, on the other hand, the attention of the patient is drawn to the symptom and it is treated as part of the illness, it not uncommonly disappears as recovery takes place.

Disorders of the endocrine system are examples of the close relationship of mind and body. The disturbance may begin either from the psychical or from the physical side. The stimulation of the sympathetic nervous system and of its coadjutors, the adrenals and the thyroid, results in a mobilizing and rapid expenditure of reserves, and for the time a heightening of all the vital processes. It is a katabolic action, and yet, owing to the quickening of metabolism, it is at first associated with a feeling of well-being which may be so strong as to produce a mildly exalted state. But, should this continue, exhaustion, with all its usual mental and physical concomitants, must sooner or later result. Apart from emotion the feeling tones associated with disease are important to note and understand, otherwise the effective changes in the patient may be seriously misleading. One of the most remarkable and yet most common instances is the buoyancy of spirits to be observed in certain patients on the days immediately following an operation. Although this brightness may to a small extent be due to the relief of mind that the ordeal which has been weighing heavily on the patient is now successfully past, another cause, if certain authorities are correct, would seem to lie in the stimulation of the sympathetic nervous system and the endocrine glands, one of whose functions, it is said, is to protect the organism in time of stress. Too often one sees this cheerfulness misinterpreted, and the physician or surgeon who looks for a rapid result welcomes this attitude as an indication of returning health, and all too frequently it encourages him to abandon the rules of carefulness and to permit his patient to do things which hasten the onset and increase the severity of the exhaustion which must follow. If a patient is depressed or unduly elated, an endeavour should be made to discover the cause; I do not refer to states of melancholia and mania, which are usually spoken of as insane conditions. There are many variations in affective tone; some may be temperamental and some rhythmic, but others may be due to metabolism changes. I have long remarked upon the sense of well-being which is so commonly associated with a fall in the body weight; it is probably one of the most deceptive mental attitudes in life. During the war many of the civilian population who lost considerable body weight owing to the restriction of food commented on how much better they were for it; some, no doubt, were better because their reserves were abundant, but others learnt to their sorrow that this betterness was ephemeral and that a period of ill health awaited them.

The mental reaction of every person to disease is individual; it is always the same for that person, and is not haphazard, but follows rules and progresses in an orderly way. The more elemental the mind the easier the problem becomes, and for this reason to study the mental reactions of children to disease is the most helpful method of approach, for in later life the experiences that an adult has passed through add their colouring to the fundamentals. The tendency, or indeed

I might say the universal custom, has been to regard man as he appears; we have a face-value standard of mental and physical health, but we never rely upon the latter in the same way as we are prepared to accept the former. If the bodily health together with the functions of such organs as we consider to be important are satisfactory, the patient is regarded as an A man, notwithstanding that the mental outlook may be scarred with former illness. There is no better example of the danger of specializing than the study of mental and physical medicine. Theories become practice, and man has been viewed from these two standpoints, which at some periods have been so divorced as to have little or nothing to do with each other. The physiologist and the biochemist have been slowly linking these divorced subjects together, and it is the duty now of all clinicians to widen their vision and not only to make use of the beginnings that have already been made, but to add to their knowledge by a systematic investigation of mind states in all physical disease. We shall find that mental symptoms have their value, and that, whilst some are primarily hurtful, others may be largely, if not entirely, protective to the organism, and may form part of its armament in its struggle to survive. But, as with all functional disturbance, they may remain long after their purpose has ceased to exist. Habit is the state towards which everything is working, and it is one of the duties of the physician to see that baneful influences do not persist if it is possible to correct them. The physical hygiene of the future must include a knowledge of mental hygiene, just as mental hygiene must take note of the welfare of the body. From this several advantages will accrue: mental processes will be better understood and mental changes will become matter of commonplace; fears of insanity will be replaced by an enlightened understanding, and the incidence of the graver forms of mental disorder will be lessened.

THE TREATMENT OF RODENT ULCER BY CHROMIC ACID SOLUTION.

BY

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THE medical man who practises in a district remote from large hospital centres is often faced with difficulties in the way of treatment not experienced by his more favourably placed colleagues. When, for example, the case is one requiring special treatment, as with x rays or radium, and the nearest hospital equipped with the necessary outfit is several hundred miles away, the problem becomes very real. To the working man the expense of the journey and the time lost from work mean a great deal, and, unless his life is at stake, he must simply do without the treatment and go on using such palliative measures as can be obtained locally.

Rodent ulcer is a disease of local malignancy which can be successfully treated by excision, by escharotics, or by radium. The two former involve the destruction of the healthy along with the diseased tissues, while the latter is not always available. Many patients object to operation, and in some cases the site of the ulcer renders operation difficult, if not impossible, without leaving a disfiguring scar. Excision of a rodent ulcer from the lower eyelid, for instance, may be followed by an ectropion more unsightly if less serious than the original ulcer.

The treatment of rodent ulcer by the application of chromic acid solution, 10 per cent. in distilled water, was suggested to me in 1910 by Sir George T. Beatson, senior consulting surgeon to the Royal Cancer Hospital, Glasgow. I began practice in Wick a few months later, and during the following four years treated 19 cases successfully. I intended publishing my results then, but five years of war intervened. Since 1919 I have treated 6 other cases, and am satisfied that the results justify this article. In only one case was the diagnosis confirmed histologically, but the history and appearance of the others made the diagnosis clinically certain. With two exceptions, all the cases were comparatively early—that is to say, ulceration had taken place, but the soft tissues only were invaded. In one the alae nasi and part of the septum were destroyed and the nasal bones exposed; after four months' treatment the raw surfaces were covered by healthy granulating tissue, except a small portion of the floor of the nose. Unfortunately this patient died of pneumonia before treatment could be completed. In the other case the ulcer was small and situated on the right ala

nasi, penetrating to the cartilage, which formed its base. This case proved most intractable, and eleven months' treatment was required to effect a cure, but during that time the patient did not lose a single day off work, and now, twelve months later, a slightly dimpled scar is all that remains.

As all the cases were treated in the same manner I will describe one more before proceeding to the details of the treatment.

The patient, a man aged 70, consulted me in November, 1919, about an ulcer of six years' duration affecting the lower eyelid towards the inner canthus. In shape it was roughly elliptical and its upper border within a quarter of an inch of the margin of the lid. Removal of the crust which covered the floor of the ulcer was followed by purulent discharge. He had no pain, but a haunting fear that sooner or later his eye would become affected. After four and a half months' treatment the ulcer was healed. It had filled up and there was only a slight depression to indicate where it had been. The scar was supple, and hardly distinguishable from the surrounding skin. There was no contraction, and consequently no ectropion.

Treatment is carried out as follows: When the crust, if any, has been removed and the floor of the ulcer cleansed with plain sterile water, chromic acid solution is applied to it and to the surrounding skin by means of a fine camel-hair brush. This is repeated daily until the patient complains of pain coming on about an hour after treatment and usually lasting an hour. Each succeeding day the pain is of longer duration and signs of irritation appear. The surrounding skin becomes red and oedematous, and at this stage, varying from the fifth to the tenth day, the treatment should be discontinued and a bland ointment substituted till the pain and inflammation subside. Plain vaseline or equal parts of boric and zinc ointments may be used. It is immaterial what emollient is chosen so long as the active treatment is interrupted at intervals regulated by the degree of pain and irritation present. During the first few weeks the ulcer may actually increase in size and depth, and it is well to warn the patient of this before beginning treatment; otherwise he is apt to conclude that he is getting worse instead of better. In my earlier cases I found that repeated application of the chromic acid solution was not infrequently followed by the formation of a dense firmly adherent crust exceedingly painful to remove. To obviate this I now apply to the floor of the ulcer a pledget of cotton-wool which absorbs the exudate and is easily changed next day. When the extreme limit of malignant invasion of the surrounding skin has been reached further changes in the appearance of the ulcer take place. Its raised border becomes flattened and covered with healthy-looking epithelium which gradually advances along the floor of the ulcer towards the centre. The chromic acid applications are now attended by less pain, and eventually the ulcer appears to be completely healed. Should this occur during the use of the ointment chromic acid should again be applied for a few days, and if the disease has been eradicated no effect whatever will be produced. Should, however, the apparently healthy epithelium thinly cover tissue in which malignant elements are still present it will break down, and a continuation of the treatment will be necessary. Chromic acid diluted to 10 per cent. strength, while inimical to rodent ulcer cells, does not affect those of healthy tissue however tender.

On two occasions I have tried its effect on epithelioma of the lip. In one case the patient refused operation, and within a fortnight of the commencement of treatment the ulcer had doubled in size and, at the urgent request of the patient, was dealt with surgically. The other case was one of incipient epithelioma at the junction of the upper and lower lips with extensive leucoplakia of both lips. The chromic acid solution was employed with a view to getting rid of this before operation. It was eminently successful so far as the leucoplakia was concerned, but here again the epitheliomatous ulcer was stimulated to rapid growth and was shortly afterwards effectively removed by Mr. Henry Wade of Edinburgh.

I would like at this point to mention an instance not of rodent ulcer, but with the same tendency to local malignancy, successfully treated on similar lines.

The patient, a woman over 70 years of age, suffered from a papillomatous growth of the left cheek of several years' duration. She had been operated on six times, with a recurrence on each occasion at the end of three to seven months. On her refusal to submit to further surgical treatment she was sent in 1909 for radium treatment under the care of Dr. Dawson Turner of Edinburgh. She was treated for 43.3 milligram hours, and left hospital apparently cured, but five months later there was a recurrence at three separate parts of the scar. I saw her a year later and after