of large glistening spores, and at the mouth of the follicle a collarette of mycelium was in some instances present. But also within the hairs there was some fungus present, though there was no apparent stripping up of the cuticle. Cultures gave a whitish downy growth with a central prominence, and a fine striated edge (Fig. 15), but in many of the original tube inoculations the growths were contaminated by staphylococci, and it was only with difficulty that a pure culture was obtained.

The patient, who was a farm labourer, stated that one of the calves had ringworm, and brought me up some hairs from one of the patches. I did not see the lesions on the calf myself. These hairs also contained an endo-ectothrix fungus, somewhat closely packed, so that the chain formation was not very evident. Cultures from these hairs also gave a white aërial growth with a striated edge. (Fig. 16.)

These cases comprise, then, cases of ringworm in which the infection was derived from animals of various kinds, but I need hardly say that, in order to obtain even such a small number as eight, I have during the past three years been obliged to examine a considerable number of animals which had not ringworm, and to pay many fruitless visits to stables, mews, and other unsavoury spots. In some cases there was good reason to presume from the clinical and cultural appearances that the fungus had an animal origin, but I was unable to locate the animal. And this is not surprising, for the number of cases having such an origin must always be a very small percentage of the whole, and it must be remembered that one such case in a child is capable of serving as a source of infection to many more.

Valuable though microscopic examination is in enabling a diagnosis to be made, greater reliance must always be placed upon cultures, which either confirm the conclusions derived from the microscope or serve to differentiate those cases where otherwise a differential diagnosis could not be made. Such, for instance, are those cases where the spores are so closely packed that their shape necessarily appears round, and the microscope is quite unable to distinguish between microsporon and ectothrix.¹ Cultures, however, soon clear up the diagnosis.

The prognosis in the above cases varied very considerably, for though the inflammatory process was in most cases acute, yet it often yielded readily to treatment, in fact, some of the apparently milder cases proved in the end the most resistant.

Investigation of the organs of fructification in the trichophyton cases showed that they were either clusters of spores or conidia placed laterally on the mycelial hyphæ, or chlamydospores. Rarely intramycelial endoconidia from 10μ to 12μ in maximum diameter were found. The clusters of spores were usually borne close to the end of a mycelial thread, sometimes in considerable numbers, so as to form, as it were, a terminal inflorescence. The conidia were from 2μ to 4μ in length, and were borne either directly on the mycelium or on short unbranched pedicles. The chlamydospores or multilocular conidia were pyriform in shape, or somewhat fusiform, with a long diameter of from 25μ to 40μ , and enclosed in a capsule which did not stain with acid fuchsin. The contents were a granular protoplasmic material, divided into two or more loculi by means of transverse septa. These multilocular conidia are borne, like the unilocular conidia, either laterally on the mycelium, or at the end of short pedicles. In some cultures they are very numerous; in others they do not appear until the culture has grown for some time, and then only in small numbers as compared with the inflorescences of groups of spores. Chlamydospores are often numerous in old cultures, in which degenerated white downy growths appear, and here they seem to appear at the expense of the unilocular conidia. In the case of the microsporon derived from the horse, reproductive organs in the form of chlamydospores were also found, divided by one or more transverse septa, and containing granular protoplasm. At the end of some of the mycelial hyphæ occurred conidia somewhat cylindrical in shape, with occasionally transverse partitions dividing them up into loculi. Other reproductive organs found in these cultures were conidia borne laterally on the hyphæ in the form of bud-like processes, and measuring about 3μ in maximum diameter.

I have to thank Dr. Pringle for placing cases at my disposal

and for much valuable assistance in the research, and Dr. Sidney Martin for some kindly criticism and suggestions.

REFERENCE.

¹ Vide Fox and Blaxall, *Journ. Derm.*, February, 1898.

REMARKS

ON

FINSEN'S LIGHT TREATMENT OF LUPUS AND RODENT ULCER.

BY

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THE treatment of lupus vulgaris and other diseases of the skin by means of concentrated light rays has now become established as a method which may fairly claim to rank as second to none in importance and utility. Although we cannot as yet make any definite statements as to permanent cure, the results we have obtained have fully justified our expectations, and, backed by the larger experience in Copenhagen, we are confident in hoping that light used in this way will give sufferers from lupus and other intractable diseases of the skin not only better results but more permanent benefit than any forms of treatment hitherto employed.

SOME POINTS IN THE TECHNIQUE.

A detailed description of the apparatus and of the method of application of the rays has already been given by Dr. Bie (in the *BRITISH MEDICAL JOURNAL*), and others, so that it is only necessary here to give a few brief practical details which experience has taught us. The appliances we have in use are in every respect similar to those used by Professor Finsen of Copenhagen. It must be mentioned, however, that we have used electric light only, as sunlight, which is less efficacious on account of the relatively smaller proportion of violet and ultra-violet rays, is almost impracticable in this country.

Current.—We have found a current of about 75 ampères and about 60 volts sufficient to produce a good reaction in the majority of cases, and have preferred to lessen the time of exposure rather than diminish the strength of the current and intensity of the light.

Intensity of Light.—In order to get a strong light it is most important to see that (1) the lenses, especially the bottom one, is clean and bright; (2) the water is clear and free from floating particles; the bottom lens should be thoroughly cleaned and polished every day, and this is greatly facilitated by having it detachable as in the newer pattern. The water should be changed every day. The use of ordinary tap water (which is used in the compressing glasses) has been found to give as good results as distilled, and its theoretical disadvantages are more than compensated for by its practical utility; that is to say, it can be changed, and the lenses cleaned daily instead of every three or four days. If these practical details are attended to a good and—other things being equal—uniform reaction will be obtained.

The Focus.—The area treated is, as a rule, kept well within the focus of the light, but a smaller focus, if it can be borne, has a greater effect. We have found it convenient to use thumbscrews instead of the ordinary ones for focussing. It is very important that the tubes should be kept in a straight line with the light rays so that none of these are lost by impinging on the side of the telescope, we have found a new adjustment which gives a larger range of movement of service in this respect.

Screens.—It is also essential that the rays should fall perpendicularly upon the compressing glass, by the use of cardboard or metal screens fixed to the end of the tubes, the slightest deviation of the glass will throw light upon the screen, and this can then be rectified. This has been found very useful, especially when the attendant is inexperienced in the treatment.

Pressure.—We have continued to use elastics to fix on the

compressors when possible, for, although somewhat more painful for the patient, they ensure firm and consistent pressure being applied all the time, and this is difficult to keep up with the fingers.

THE REACTION.

The resulting reaction varies in intensity and according to the idiosyncrasy of the patient, but largely depends upon the intensity of the light at the time of exposure, which itself depends upon many factors, such as the focus being exact, the size of the focus, the clearness of the water and lenses, the quality of the carbons, etc. In addition to these factors there are those, of course, which arise in the nature of the part that is being treated, as pointed out by Mr. Morris in a former article—namely, the depth of the

ness, a bleb forms, bursts, and dries, to form a thick yellow crust at about the end of a week, and in ten days or a fortnight the sore has completely healed.

Variation in Different Parts.—When situated over loose tissues—for example, near the eye—there is often great swelling of the neighbouring parts, so that the eyes may be nearly closed.

EFFECT OF THE LIGHT RAYS.

Our experience is that the effect produced—or, in other words, the benefit to be derived from the application of the rays—varies directly as the intensity of the reaction, and it has therefore been our object to produce a good reaction in all cases.

The same principle seems to apply in the case of an ulcer.

Fig. 1.—Showing apparatus and mode of applying rays.

disease, the amount of scarring, pigmentation, and vascularity.

Time of Onset.—This varies from five or six hours to twenty four hours; it is generally noticed the following morning.

Severity. It is usually slight for the first few days of treatment, and then becomes more marked; it does not appear to diminish in intensity after continual treatment, but, if anything, to increase.

Variability.—It only varies slightly according to the idiosyncrasy of the patient, and the conditions which hinder its appearance have already been enumerated. Other things being equal, its intensity and time of onset are fairly uniform.

Duration. After a preliminary hyperæmia with slight red-

ness, the epidermis is absent there is no blistering and crusting, as there is when the skin is intact; and many more consecutive applications can therefore be borne to a single spot. The reaction is manifested by redness and soreness, with, perhaps, some swelling of the surrounding parts and great tenderness on pressure. This comes on about the fourth or fifth day, and if the treatment is continued the skin around the ulcer becomes inflamed.

DISEASES AMENABLE TO LIGHT TREATMENT.

Lupus vulgaris is *par excellence* the disease most benefited by this treatment, although it cannot be regarded as specific, and we cannot go so far as to say with Dr. Bie that the diagnosis becomes doubtful when cases do not respond to it. That it has a marked effect upon rodent ulcer and other

diseases does not disprove the bactericidal theory of its mode of action, although it negatives the supposition that it is specific for the tubercle bacillus alone; apparently there is some chemical or nutritional effect upon the tissues also to be taken into account. In all the cases we have treated the improvement has been marked and uniform though in some cases very slow.

EFFECT IN LUPUS VULGARIS.

In several cases one application has been sufficient to cause the disappearance of a small isolated superficial nodule, at any rate for the time being.

As regards the time required for treatment, it may be said in general terms that in an extensive case a single spot is treated daily, and the parts first treated are sufficiently healed in a few days to allow of their being treated again. If there is only a small area to treat the applications are continued as long as possible until the soreness of the part and the crusts formed necessitate cessation of treatment for a few days, when it is again continued. In an extensive case involving, for instance, both sides of the face, a year with intervals of rest may be given as a rough indication of the duration of the treatment.

The use of pyrogallie acid ointment, though, as pointed out by Dr. Bie, not necessary for the success of the treatment, will in cases where there is great thickening of the skin, considerably lessen its duration. A 5 per cent. ointment has been used in a few cases for about a week, and then the part is allowed to heal before the light applications are begun. By this means the thickening is reduced and the light can penetrate more easily.

EFFECT IN RODENT ULCER.

In the case of an extensive rodent ulcer in which the typical hard edge was in parts absent, the effect of a single application was apparently to stimulate healing of the part to which the light was applied, and was followed by rapid ingrowth of healthy epithelium from the surrounding skin. In cases where there was no ulceration, reddening and perhaps slight excoriation of the skin resulted from a few applications, and the growth gradually became softer, and finally disappeared without any obvious breaking down of tissue. In small ulcers entirely surrounded by an indurated rolled edge there was no visible effect at first, but after several continuous applications the discharge increased and an inflammatory reaction occurred; at the same time the induration gradually became less marked until a simple punched-out ulcer with soft edges remained. On cessation of the treatment healing took place with great rapidity as soon as the inflammation had subsided. The stimulating effect upon the tissues is marked in the ulcerations both of rodent ulcer and lupus vulgaris. It seems therefore, although further experience is required to confirm the statement, that the light rays tend to stimulate the healing of healthy granulating surfaces, and to cause softening and destruction of diseased tissues.

EFFECT IN LUPUS ERYTHEMATOSUS.

A few words may be said about other conditions that are, in our experience, amenable to treatment by Finsen's rays. In lupus erythematosus the effect has been marked, although not so certain as in lupus vulgaris.

In our first case, which was an acute erythematous one without much scarring, one application of an hour's duration caused a very severe reaction with great swelling of the surrounding parts. When this had subsided, a fine white scar, scarcely to be distinguished from normal skin, resulted in the area treated. On account of the severity of the reaction shorter exposures were tried, but without much effect. As they were gradually lengthened and a reaction occurred, a better result was obtained, and after some time it was found that an hour's treatment could be borne. In the original spot, which was situated in the centre of a diseased patch, the disease has to some extent relapsed, probably because treatment was neglected from unavoidable causes. In other places, however, a fine white scar with absolute obliteration has followed a good reaction.

Cases of this sort are therefore favourable for the treatment, but in the more chronic cases with much scarring it is very difficult to get a good reaction, and the cases are

therefore not so amenable to treatment, although one case showed great improvement after persevering with the treatment for some time.

CONSTITUTIONAL EFFECTS OF THE TREATMENT.

These are practically *nil*. In a few cases existing headache or neuralgia has been slightly aggravated. In 2 cases the applications have been followed by a peculiar sensation, not amounting to pain, in the head an hour or so after treatment. Occasionally a slight feeling of giddiness is experienced on rising from the lying posture. In one case treatment of an ulcer situated on the nose and inner angles of the eyes caused referred pains on the vertex, evidently through the nerves underlying the ulcer.

EFFECT ON THE EYES.

Although we have treated several cases in which the inner or outer canthi or lids were involved, there has not been any deleterious effect upon the eye itself. Although the eyes are carefully covered up the light can still be seen by the patient through the protecting wool and cloth or paper, and slight running of the eyes has been experienced by a few patients.

EFFECT ON MUCOUS MEMBRANE OF NOSE BY PENETRATION.

In one case in which the skin of the nose was treated, improvement took place in the mucous membrane and the sensation of smell was said to have greatly improved. It is possible that there is some slight effect, as the cavities of the nose or mouth are lighted up when the light is applied to the exterior.

PREPARATION OF THE PATIENT.

The crusts are removed with forceps; the area to be treated is then bathed with boracic lotion, and if there is any grease on the part with ether. The skin is then marked with a blue pencil so as to ensure the light being applied to the same spot. After treatment the compressors are cleaned with spirit and carbolic acid. The diseased surface treated is dressed if necessary with a simple zinc lanolin ointment, or a paste with zinc, vaseline, and starch, and a little boric acid.

UNFAVOURABLE CONDITIONS.

There are certain conditions which make a case unfavourable for treatment:

A. Those which hinder the penetration of the light, and so prevent a good reaction:

1. *Scarring*, especially from scraping, when the cicatricial tissue is, as a rule, very dense.
2. *Pigmentation*, which intercepts the ultra-violet rays.
3. *Great vascularity*, because it is more difficult to express the blood from the part, and unless the tissues be made anæmic the rays will not penetrate.

4. *Great depth below the surface*, with which may be included: (A) Thickness and induration of the nodules; (B) surrounding inflammation and induration; (C) confluence of the nodules.

B. Difficulties of position:

1. *On the skin*; for example, when the disease is situated near the eye special compressors have to be used, and it is sometimes difficult to adapt even these to the surface to be treated, or on the eyelid when it is impossible to apply adequate pressure.

2. *On the mucous membrane* the interior of the nose and mouth is inaccessible, with the exception of the gums and lips, which can be treated, the latter by eversion. (In these cases the combination of x rays with Finsen's treatment has been found most successful.)

C. Extent of the disease:

As only a small area can be treated each day very extensive cases are unfavourable, both from the long duration of the treatment and the fact that while one part is being treated the disease may be spreading in another.

FAVOURABLE CONDITIONS.

Conversely, cases are favourable where the disease is limited to a small area, is superficial, is not spreading, and has not undergone previous treatment, especially operative.

ADVANTAGES AND DISADVANTAGES OF THE METHOD.

The advantages of the method may be briefly summed up as follows: Reliability, painlessness, excellent cosmetic results; less liability to relapse, although this may possibly be due to the fact that the patients are under daily treatment and constant supervision; avoidance of surgical measures. It may also be a useful adjunct to other forms of treatment.

Its principal disadvantages are the long time required, the small area treated at a time, and the expense.

CASES.

The following cases are selected from a considerable number under treatment as typical examples both of the conditions suitable for the application of the method and of its effects:

LUPUS VULGARIS.

CASE I.—Female, aged 32.

Family History.—Father and three sisters alive and healthy. No history of consumption or skin disease in the family.

Fig. 2.—Case I. Lupus vulgaris; before treatment.

Personal History.—Except for an attack of small-pox at 15 years of age she has always enjoyed good health.

History of Present Condition.—When she was 16 years of age, a year after she had the small-pox, she noticed five small red spots on the right cheek. In a year's time, without treatment, these joined to form an ulcer. In 1886 she was treated in a London hospital with cauterisation every week for seven weeks; it was greatly improved by this. She then went to Margate for five months, where it was scraped once. The following year, 1887, she returned to the first hospital, and attended there on and off until 1891. During this time it was scraped thirty-four times. The left cheek and upper lip were still quite free. In 1891 she underwent a course of treatment with Koch's tuberculin in another hospital. The reaction was severe, and in a month her face was "completely" healed. The disease relapsed however, at the end of another month, and then for the first time spread to the other cheek and upper lip. She then returned to the first hospital, where the diseased surface was again scraped several times. In April, 1897, she was treated with Koch's new tuberculin, with great temporary benefit, but three months afterwards the disease became worse again. In October, she had injections of yeast. The reactions from this were very severe, and were followed by considerable improvement. After this a 2 per cent. pyrogallie acid ointment was used until November 29th, 1899, when she began to be treated with Roentgen rays by Dr. Harrison Low. These were

applied to an area including the nose and upper lip, and a small circular patch about 2 inches in diameter on the left cheek.

Condition at Commencement of Light Treatment on May 15th.—The distribution and character of the disease are well shown by the photograph (Fig. 2). Both cheeks, the nose and the upper lip, are extensively affected, and there are several outlying nodules on and under the chin, near the left outer canthus and one on the left upper eyelid. The surface is infiltrated with nodules more or less confluent in the central parts, discrete at the edges, the nodules at the margin on the cheeks are especially large and prominent, and the whole surface is thickened and raised above the level of the normal skin with the exception of the parts treated with the Roentgen rays; the latter, as regards the skin, are paler and flatter, and a good deal of the lupus has disappeared, the ulceration of the nose, the alae and part of the septum of which are lost, has completely healed, and the nostrils instead of being obstructed are now quite clear.

May 16th. Began light treatment, one hour daily, leaving out the parts that are being treated with Roentgen rays.

May 17th. There has been a good reaction with the formation of a blister. (Each application, provided the light was good and sufficient pressure was exerted, was followed by a reaction in the usual way, so that it is unnecessary to detail the phenomena resulting from each one, it is sufficient to say that the improvement was more rapid when there were good reactions than when for some reason or other they were only slight).

Fig. 3.—Case I. Lupus vulgaris; after treatment.

June 26th. The patch on the right side of the face has now been gone over several times; it is difficult to see the effect upon the lupus tissue: owing to the redness and crusting.

July 10th. The left side of the face is now being principally treated, avoiding the area which is being exposed to the x rays; the latter is now pale, smooth, and soft, and has a pink, shining surface, with a few nodules here and there.

August 11th. The edge of the diseased area on the left cheek is now steadily improving, like that of the opposite side it was infiltrated and dark in colour, and raised above the surface; it is now flat and the nodules are more diffuse. At the lower border of the patch on the right side a few apparently fresh nodules are seen; this side has not been treated for some time.

September 4th. Treatment resumed after three weeks' interval. The interval has allowed time for the inflammation consequent upon the reactions to disappear so that the whole surface is much paler. The diseased part is not raised above the surface to any extent, and there is less thickening of the skin. In places the nodules are apparently more numerous; it is difficult to say whether this is due to a fresh growth or to the fact that the old ones are more apparent owing to the reduction of the thickening and inflammatory redness. The disease has not spread at the margin. In one or two spots the skin is as thin and supple as normal, and no nodules can be seen on pressure with a glass. The edge

is flat all round, and not appreciably thickened, whereas before treatment it was raised and indurated.

September 18th. The reactions continue to be smart. As a result of a return to the x-ray treatment to the parts indicated above, a widespread erythema of the face was produced after six sittings.

November 16th. The face is quite pale; the skin is everywhere smooth, shiny, and supple, and there is practically no scar. The most marked nodules are situated on the root of the nose; those round the edge of the patch on both cheeks have practically all disappeared.

December 8th. The reactions are still very marked, and are rather increasing than diminishing in intensity; this is possibly due to the fact that the skin is thinner and more anemic than it was, and so allows the light to penetrate more easily. There are still a good many nodules scattered here and there, but it is difficult to distinguish them owing to the pigmentation which is also in spots. There are a few fresh ones at the root of the nose, but this part has only been treated with x rays, not with light. A photograph (Fig. 3) taken on December 1st shows that the skin is now pale and that there are no raised nodules; the crusting from the treatment, which was only discontinued for a few days, however, somewhat obscures the improvement.

CASE II.—Male, aged 48.

Family History.—Nothing of special interest. No history of skin disease or consumption.

Personal History.—Has always been fairly healthy, although he is very subject to headaches.

History of Present Condition.—The disease was first observed at the age of 10, on the right cheek, when it was about the size of the little fingernail. It increased in size very slowly for the first few years. In 1889 it was about the size of a small hen's egg in circumference. It was scraped in the summer of that year, and again in 1890. It then began to spread very rapidly, involving nearly all the skin on the right side of the face. It did not appear on the left side of the face until about five years ago. In addition to scraping he has used pyrogallie acid ointment, and has had it cauterised with the galvanocautery.

Present Condition.—Both sides of the face are extensively affected with a somewhat superficial non-ulcerative lupus; the nose and central part of the face have remained clear. The surface presents a very fine smooth scar tissue, which is deeply pigmented, so that it is difficult to see the individual nodules, which are indeed scarce owing to the treatment in Copenhagen. On the left side the disease extends from the level of the outer angle of the orbit, the whole side of the face being involved behind a line drawn from this point to the middle of the ramus of the jaw, and extending posteriorly close up to the line of attachment of the ear. This side was treated principally with the electric light at Copenhagen, and the disease practically disappeared for the time; it however relapsed about three months afterwards, and a fresh growth of nodules took place, which are now seen especially at the upper and anterior margin near the eye, and also at the lower border near the angle of the mouth. On the right side, beginning at the outer angle of the orbit, the anterior boundary extends downwards to a point on the cheek about 1 inch from the ala of the nose, from here it curves downwards and backwards, and then again inwards to reach the chin in the middle line. It then curves backwards on the neck to the ear, the whole of which is involved in the disease, and the skin for 1 inch behind it, until it reaches the border of the hair in the temporal region, about $\frac{1}{2}$ inch above the level of the top of the ear: from this point it forms a slight curve with the convexity upwards, and falls to meet the starting point at the outer angle of the orbit. The right ear is enormously enlarged from lymphatic obstruction; numerous nodules can be seen in the skin. Treatment was commenced on May 1st, 1900, one hour every day, the left side being treated first.

June 8th. The skin reacts very easily, and he has made a steady improvement. The skin of the left side of the face, which has been treated daily, is smooth and soft, and in the malar region especially it is difficult to make out any nodules. An isolated nodule, situated close to the outer angle of the orbit, has completely disappeared as the result of a single application. At the lower margin of the diseased area, near the angle of the mouth, there are still several distinct nodules. Treatment to the right side of the face was begun to-day.

June 16th. There has been a good deal of desquamation on the left side of the face, the surface is smooth, and shiny, and decidedly paler. The right side is reacting freely every day, and there is now a large bulla at the site of a recently treated spot.

June 26th. Reaction still sharp. The right side is now beginning to show some improvement.

July 1st. The right ear, which has always been much enlarged, is increasing in size.

October 1st. Treatment was resumed. After the last-mentioned date, the patient says the ear became very inflamed and painful, and at the same time he was ill in bed for some time with fever and headache—probably an attack of influenza. The ear, which has now completely healed, is smaller in size: in the lower part there are two more or less circular depressions resulting from the ulceration that occurred; the scars, however, are not thickened, and are of the same colour as the rest of the skin. The improvement in the skin of the face is very marked and the appearance much improved by the diminution of the redness. It presents a fine, supple, pigmented surface, with a few nodules at the edges and scattered here and there in other parts. On the left side scarcely any disease can be made out, but there are a considerable number of nodules at the lower border of the patch on the right side of the face, especially under the chin and on the skin of the neck.

October 23rd. The swollen ear has been treated again for some days, and is now very sore. There is a small, brownish-coloured spot on the lobe of the left ear, which has been present about a week, and resembles a lupus nodule, although no "apple jelly" can be seen deep in the skin when it is pressed with a glass.

December 1st. The improvement continues.

CASE III.—Male, aged 21.

Family History.—Father and mother and five brothers and sisters alive and healthy. No constitutional disease in the family.

Personal History. He has never been very strong, and often suffers with colds, but has never had any serious illness.

History of Present Condition.—The disease began, when he was 7 or 8 years of age, on the left side of the nose. From this place it spread for about a month, when he went to a hospital and had it treated with an ointment; but he had no active treatment until 1890, when it was cauterised with nitric acid twice a week for six months. In 1891 he underwent a course of Koch's first tuberculin. This continued for about a year with intervals of rest, but the improvement was not very great. When the disease began to get worse again he went to another hospital, where it was scraped three times, and a piece at the right angle of the mouth excised. In 1896 he had thyroid treatment at St. Mary's Hospital, from which he derived some benefit. In April, 1897, he had a course of tuberculin No. 2, also at St. Mary's; he steadily improved under this, and most of the ulceration healed.

Present Condition.—The disease affects the central part of the face, being roughly enclosed in a circle about $\frac{3}{4}$ inches in diameter; the parts about the mouth, however, trouble him most. The lower parts of the nose are destroyed, and the tip of the nose incurved. The remains of the septum are prominent. There is now, however, no active disease of the skin of the nose; the nostrils, especially the left, are obstructed, and the breathing loud, but he says this is recent, and due to a cold. The mucous membranes of both lips are extensively ulcerated, and present an irregular, raw, and crusted surface. The upper lip is most affected, and is swollen and protruded. The disease involves the skin and mucous membrane, both externally and for a short distance on the under surface. The corresponding opposed surface of the lower lip is comparatively free, but there is ulceration at the angles of the mouth, extending into the buccal cavity; the skin below the red margin of the lower lip is also ulcerated. On the cheeks there is no ulceration, and the skin is smooth but very red, and numerous nodules can be seen, especially at the margin, when the blood is expressed. There is a good deal of scar tissue in the upper lip and chin, also a linear scar along either naso-labial fold. There are some outlying nodules below the main patch on the right side of the chin. The teeth are very bad, and evidently aggravate the ulceration of the adjacent mucous membranes. The lips cannot be fully everted, but as far as can be seen the gums are not affected. Treatment was begun on June 20th, 1900—one hour daily. The ulcerating surfaces of the upper and lower lips were at first treated with boric compresses after the applications of light.

June 27th. The ulcerated surfaces are cleaner, there has not as yet been much reaction. The boric acid compresses are being continued, and the lips and mouth syringed with boric acid lotion after the treatment every day.

July 10th. Had a sharp reaction this morning from yesterday's treatment; this is the first good one he has had. The ulcerated parts look healthier, and there is less discharge; they are well cleansed every day with boric acid lotion and dressed with a simple antiseptic ointment.

September 25th. Treatment recommenced. There is great improvement as a whole but the disease has relapsed in parts; the ulcerations at the corners of the mouth, which had nearly healed, have broken down again; this has occurred during the last week. The nodules bordering the patch on the face are if anything more apparent than before treatment, but this is probably due to the fact that there is less hyperæmia and oedema.

October 3rd. The reactions lately have been very severe and the parts are very sore. Treatment has been stopped to allow time for healing and subsidence of the inflammation.

October 31st. Treatment has only been able to be carried on intermittently as severe blistering follows each exposure, and after a few applications the face becomes very sore and tender.

December 1st. He has now had a considerable interval of rest so as to allow of healing and abatement of the inflammation; the improvement is especially marked in the upper lip, which is now only a little swollen and does not protrude nearly so much; there is less redness of the patches on the cheeks, and it is difficult to see any lupus on pressure with a glass.

LUPUS ERYTHEMATOSUS.

Mrs. X., aged 43 years.

Family History.—Her father is gouty. Two sisters and one brother are living. There is no history of consumption.

Personal History.—She suffered with bad headaches as a child, and has never been strong.

History of Present Condition.—Her complaint was first noticed about fifteen years ago "inside the left eye." After two or three years it came on the lower lip, and then on the upper lip and right eye. She has had various kinds of treatment, including scraping, "electric needles," burning with the cautery and oxygen treatment, and has taken potassium iodide and other drugs internally.

Present Condition.—The face is affected with symmetrical patches of acute lupus erythematosus. There are two areas on the chin extending for about an inch below the red margin of the lip on either side of the middle line. The upper lip is also involved from the nose to the angles of the mouth on either side, but more on the left side than on the right. There are two more symmetrical patches below the eyes, affecting the skin for about an inch below the ciliary margin of the lower eyelids, and the latter are drawn down and everted so as to show the mucous membrane.

The first application was on May 31st and lasted one hour. This was followed by a very severe reaction, with great pain and swelling of the face. When the inflammation and swelling had subsided, a small white scar was left in the middle of the erythematous area where the glass had been applied, which was on the left side of the chin.

On June 30th the patient came again for treatment, and on account of the great severity of the last reaction she only had ten minutes exposure to the light.

July 6th.—There was no result from the last application; fifteen minutes' exposure was given to-day.

July 9th. There was considerable reaction from the last day's treatment, but it was not nearly so intense as the first one. She had twenty minutes to-day.

July 11th. Reaction as before with exudation and the formation of a serous scab. Treated for half an hour.

July 21st. Very sharp reaction yesterday with swelling and pain. The

areas that have been treated are inflamed and covered with yellow crusts. Half an hour's treatment.

August 8th and 11th. Half an hour's treatment to two spots on each day. Treatment discontinued for three weeks.

September 7th. Treatment recommenced with one hour's application to a single spot. The treated patches are paler and more scaly.

September 13th. There is less erythema and in parts a pale fine scar-tissue. She has been able to bear an hour's treatment to one spot at a time, although the reactions have been severe and painful. Treatment discontinued.

October 5th. Treatment begun again. There is marked improvement; all the places are less hyperæmic and therefore less noticeable. The greatest improvement is seen in the patch below the left eye, where the erythematous surface is replaced over the greater part of its extent by a very fine white scar scarcely to be distinguished from normal skin. Treatment was again discontinued on October 10th.

November 8th. The patient came again to-day. The skin below the eye is still quite white and looks almost normal. The areas on the upper lip and under the right eye are also looking much better. Those on the chin have not improved and if anything do not look so well.

December 31st. She has only had two applications since the last date and started again to-day. There has been no relapse. To-day is the

Fig. 4.—Case of rodent ulcer (Mr. A.); before treatment.

twenty-seventh day of treatment. Since September 7th she has had applications of one hour to a single place.

RODENT ULCER.

CASE I.—Mr. A., aged 44.

Family History.—Mother died of cancer, otherwise good.

Personal History.—He has always had good health.

History of Present Condition.—The disease dates from three years ago, when it came as a small spot about the size of a pin's head after shaving. It was continually irritated both by shaving and picking off the scab which always formed on it, and increased very slowly in size. Two years ago a large scab formed after treatment with oleate of mercury. There is slight irritation and sometimes a shooting sensation, but no pain.

Present Condition.—There is a small circular ulcer, about the size of a sixpenny piece, situated on the right cheek on a level with the ala of the nose. The edge is rolled and "cartilaginous." The ulcer is continually discharging and forming a scab (Fig. 4). Once or twice the skin has healed over it.

June 26th. Began light treatment; the ulcer was slightly sore after the hour's application.

June 29th. The edge feels slightly softer.

July 4th. There has been a good deal of serous discharge; the edge is clean cut but not hard; the base is formed of healthy granulations.

July 6th. Presents the appearance of a simple ulcer; it is somewhat

tender, but there is no pain; the edge is now quite soft. Treatment discontinued after seven applications of one hour each.

July 20th. The ulcer has now completely healed over, the surface is smooth and the edge soft. At the upper and inner margin a little indurated spot can be felt, but this is apparently only scar-tissue, and he says it is due to a razor cut, which originated the trouble.

The photograph (Fig. 5) was taken to-day, twelve days after the last day of treatment.

December 1st. There is no sign of recurrence; the scar is a little irregular in places, but is firm and healthy.

CASE II.—Mrs. B., aged 35.

Family History.—Father died of consumption and one brother is consumptive. A sister has had rheumatic fever; there are five in the family altogether. Some remote relations have had cancer, but no one in her own family.

Personal History.—Good. She had influenza badly once, but no other serious illness.

History of Present Condition.—Nine years ago she noticed a little "speck" on the right side of the face below the eye. It resembled a "chicken-pox scar," the skin being indented but not thickened. This remained in the same condition until three years ago, when it began to get red and scaly and "looked like eczema." About a year and a-half ago the redness and

Fig. 5.—Case of rodent ulcer (Mr. A.); after treatment.

scaliness became more pronounced and a ridge formed round the edge, and during this time a "head" has continually formed and come off again, and it has often bled slightly when the scab has been removed.

Present Condition.—Situated in the malar region, $1\frac{1}{2}$ inch below the right infraorbital margin, there is a depressed, thickened, slightly discoloured area of skin about 1 inch long and $\frac{1}{2}$ inch wide, which at the upper edge is beginning to ulcerate. The surrounding edge is raised, rolled, and indurated, and typical of a rodent. On the skin above the left eye there is a small, round, depressed scar, about the size of a pea, similar to the one the existing lesion originated from. This is said to have come before the other, but is at present apparently quite innocent.

Treatment was begun on June 1st with one hour.

June 2nd. No change from yesterday's treatment, but after the hour's application to-day there is a little redness and throbbing and slight swelling of the part.

June 3rd. The redness and swelling have increased slightly, but there is no pain or tenderness.

June 11th. The ulcerating surface has increased in size, and there is more discharge; she can, however, bear the pressure of the glass quite easily.

June 13th. The lesion now presents the appearance of a clean punched-out ulcer, the edges are much softer and seem to be becoming involved in the ulceration.

June 16th. The ulcer is now a little larger but the base and

edges look healthy, the edge is soft all round, and no induration can be detected. Treatment was discontinued, and the ulcer allowed to heal. She has had twelve applications altogether, extending over sixteen days.

June 30th. The ulcer has nearly healed; the outer edge is rounded and rather prominent on account of the formation of scar tissue.

December 1st. The part has remained healthy, and presents a firm glistening scar. There is a little depression at the upper and outer margin, due to contraction of the scar line. There is no sign of any recurrence of the growth.

A PRELIMINARY COMMUNICATION ON THE TREATMENT OF RODENT ULCER BY THE X RAYS.

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THE following observations are a preliminary communication on the treatment of rodent ulcer by the *x* rays, based upon

Fig. 1.—Case 1 before treatment.

the experience of 12 cases. I was led to adopt this procedure for the following reasons:

On June 26th, 1900, Mr. Jonathan Hutchinson, jun., sent me a very severe case of rodent ulcer in order that I might try the effects of the Finsen treatment. I was familiar with the success obtained by the Danish professor in this field, having had an opportunity of seeing some of the cases which he had treated. These, with others, are embodied in a paper published recently in Copenhagen.¹ I found, however, that Mr. Hutchinson's patient could not bear the pressure of the special apparatus which is used in the Finsen method to render the parts under treatment anæmic. As I had already had some experience of the value of the *x* rays in the treatment of lupus, I determined to apply them in this case of rodent ulcer, and was gratified to find that improvement resulted.

The case, as I have already mentioned, was a severe one,

one eye and part of the nose having been destroyed, and the antrum of Highmore opened; but after a fortnight the progress of the ulceration was arrested, and some parts began to heal. The hopefulness of this method of treatment in less severe cases was manifest, and I was induced to try it at the next opportunity. So far I have only treated cases which have been deemed to be unsuitable for operation or in which the patients have refused operative measures. Of my 12 cases, 8 are still under treatment and 4 are under observation, the ulcers having healed. Three patients have been shown at the Dermatological Society of London, and also at Branch meetings of the British Medical Association and at the Roentgen Society. A recent paper by Stenbeck, of Stockholm,² records the successful treatment of a case of rodent ulcer by an almost identical method. His case is the first in which this procedure was adopted. I append details of 3 cases which I have shown, with photographs.

CASE 1.—M. A. G., aged 39, came to me at the London Hospital for light treatment on August 9th, 1900, suffering from rodent ulcer of eight years'

Fig. 2.—Case 1 after treatment.

duration. The patient's father and mother are alive and well, her brothers and sisters are healthy. She is married and has two children: the elder died when 6 months old from diarrhoea; the younger, now 4 years, is quite well. The patient has had no miscarriages.

The disease commenced eight years ago with the formation of a small "lump" behind the right ear close to the superior curved line. The "lump" ulcerated, and the ulceration gradually spread. She was operated upon four times at one of the great metropolitan hospitals, and four years ago the disease was deemed unfit for further operation. When she presented herself for examination on August 9th there was a large ulcer behind and above the right ear (Fig. 1). It extended from the posterior surface of the auricle to within a short distance of the external occipital protuberance. The upper margin was curved, its anterior end turning sharply down to a point just in front of the external ear. The lower border ran in an almost horizontal line level with the lower margin of the auricle. At the junction of the scalp with the posterior aspect of the external ear, the ulceration was very deep, and the ear itself was invaded, so that there appeared to be every probability of these parts separating should the disease extend further. The ulcer was characteristic: its edge had the bitten-out appearance, and the margin was distinctly rolled. The surface was very irregular, and a dirty, somewhat blood-stained discharge was present. A small portion of the margin was