

stage of rodent ulcer. In the end, however, such warts on the lip are apt to degenerate into deeply penetrating epitheliomata.

Vascular growths may form on the lip, usually assuming the form of venous nævi, dark purplish, soft prominences, of the size of half a pea or larger. They are not very uncommon on the underlip of elderly women, cause no subjective sensations, but are disfiguring. They can be dealt with very satisfactorily by electrolysis.

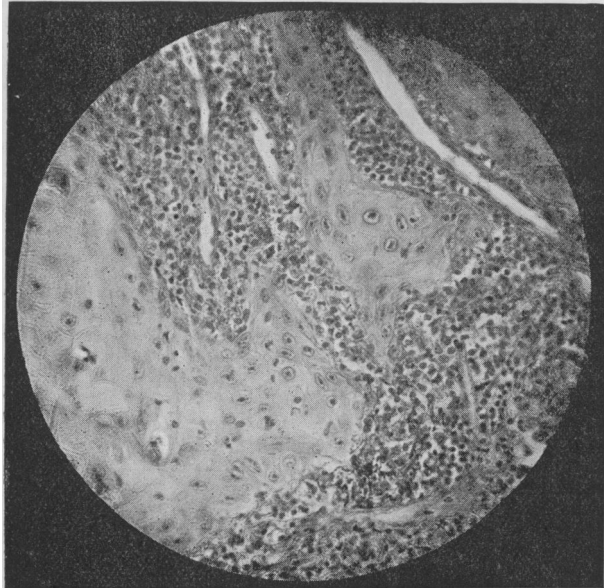


Fig. 2.—Microphotograph  $\times 180$ . One of the slender epidermic processes invading the dermis, the abundant small, round-celled infiltration, even the enlarged lymph spaces, are perfectly brought out. At the lower part, to the right, is seen one of the epithelial islets.

One instance has come under my notice where the little tumours of molluscum contagiosum occurred on the prelabium. They were not limited to that region, and if the view be accepted that the ailment owns a glandular origin they may have taken their rise in the labial glands.

## ON A PREPARATION OF MILK FOR DIABETIC PATIENTS.

By SYDNEY RINGER, M.D., F.R.S.,  
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THE extremely meagre and distasteful diet of diabetic patients induces me to draw attention to a preparation of milk which I hope may be found useful and not distasteful.

In the *Journal of Physiology*, vol. xi, p. 473, and vol. xii, p. 164, in recording experiments with caseinogen and casein, I drew attention to a method of preparing caseinogen from milk, which is freed from all sugar (and salts). The following is the method: Add to a pint and a half of milk about 90 c cm. of a 10 per cent. solution of acetic acid. This precipitates a curd-caseinogen. It should be allowed to settle, and the clear fluid siphoned off and distilled water added. After settling, this should be decanted or siphoned off, and the curd should be filtered and well washed with distilled water. If it is then rubbed up in a mortar with some calcium carbonate, and water is added, and all the caseinogen becomes dissolved, the calcium carbonate soon settles and the milky fluid can be decanted off. The dissolved caseinogen behaves just like milk. If rennet and a calcium salt is added, and the mixture is heated to  $40^{\circ}\text{C}$ ., it quickly clots, the caseinogen becomes changed into casein, which precipitates by combining with the calcium salts.

My friend, Mr. Martindale, with the aid of his able labora-

tory assistant, Mr. Lee, has lately made some of this solution of caseinogen, or in other words, milk without the sugar of milk. They find that the caseinogen settles better after the addition of the acetic acid if the milk is diluted with an equal quantity of water, and they filter and wash the precipitated caseinogen on a calico filter, which allows the washing to be made quicker than in my experiments where I used filtering paper.

On the addition of about 2 per cent. of glycerine to the mixture of caseinogen a not unpalatable form of milk is produced.

## THE RED LIGHT TREATMENT OF SMALL-POX.

By NIELS R. FINSSEN, M.D.,  
Copenhagen.

### HISTORICAL.

THE method here treated of, which is the result of half-forgotten empiric experience and modern scientific investigations of light, is of considerable medico-historic importance. In the Middle Ages small-pox patients were treated by wrapping them in red coverings and by putting red balls in their beds. John of Gaddesden treated a Prince of Wales for small-pox by surrounding him with red objects. According to information which has appeared in connection with the new red light treatment, red is as yet much employed in different places in the popular treatment of small-pox. In Roumania, according to Dr. Capitanowitz, the small-pox patient's face and hands are covered with red cloths; Dr. Lassabatie informs us that in Tonkin the patients are placed in alcoves which are closed with numerous red carpets, whilst Dr. Sassakawa reports that in Japan the patients are covered with red blankets, and children with small-pox are given red toys.

This remarkable and uncertain employment of the red colour in the treatment of small-pox has naturally been looked upon as a mediæval superstition, but the numerous new experiments which proved the importance of the red light treatment must undeniably lend them something more than a historic interest.

Whilst engaged upon some investigations as to the effect of light upon the skin, my attention was drawn to some old reports (Picton,<sup>1</sup> 1830, Black,<sup>2</sup> 1867) on the favourable results arrived at by the exclusion of light in cases of small-pox. As everything, from a theoretical point of view, was in favour of the correctness of the observations, and as at the same time practical experience proves that the pock-marks are thickest on the face and hands—that is, those parts of the skin which are most exposed to the light, I drew (without having any knowledge of the mediæval treatment) attention in an article in *Hospitalstidende*, July, 1893, to this treatment, but proposed at the same time the use of red light instead of complete darkness—that is to say, the exclusion of the light's chemical rays. Shortly afterwards this modified treatment was tried in Bergen (Norway), where Drs Lindholm and Svendsen<sup>3</sup> treated 8 patients in red light. Of these 8, 4 were unvaccinated children, of whom some had confluent small-pox; they were all cured without suppuration, without secondary fever, and without pitting.

These favourable results, and the explanation which I had given at the same time led to the method being tried in various places. Before proceeding to the reports which have appeared on the subject, I purpose giving a short theoretical account of the effect of light upon the skin, which is of course the basis for an understanding of the method.

### THE EFFECTS OF LIGHT ON THE SKIN.

It has for a long time been a recognised fact that sunlight can produce an irritation of the skin of a greater or less intensity, from a slight erythematous redness to the formation of vesicles, and desquamation (erythema or eczema solare). It was formerly believed that this was caused by the heat rays, and the erythema was therefore called erythema calori-

<sup>1</sup> On the Exclusion of Light as a Means of Preventing the Pitting in Small-pox; the *American Journal of Medical Science*, 1832, p. 119.

<sup>2</sup> How to Prevent Pitting of the Face by Small-pox in Persons unprotected by Vaccination. *Lancet*, 1867, vol. 1, p. 792.

<sup>3</sup> *Medicinsk Rev.*, October, 1893.

-cum. More recent investigations (especially by Charcot,<sup>4</sup> Widmark,<sup>5</sup> Unna,<sup>6</sup> Hammer,<sup>7</sup> Maklakoff,<sup>8</sup> Robert Bowles,<sup>9</sup> and myself<sup>10</sup>) have proved that the inflammation is not due to the solar heat rays but to the most refrangible, the so-called chemical rays. This also explains various practical observations. For instance, when climbing glaciers, even when the temperature is below freezing point, the skin is liable to light erythema, which is principally due to the strong reflection of the light from the ice fields. Very strong electric light, such as that produced by the electric welding of metals, can cause a severe inflammation of the skin and of the mucous membrane of the eye, which is much more violent than that caused by solar light. The Russian physician, Maklakoff, who exposed himself to this influence of light, describes the phenomenon as follows:—All those parts of the skin which were exposed to the light became severely inflamed, the face was brick red, swollen and painful, the skin of the eyelids baggy so that it was impossible to open the eyes. After two days had elapsed the symptoms improved, and a few days later the skin peeled off in large flakes, as after scarlet fever.

The inflammation of the skin caused by the chemical rays of light differs macroscopically from that caused by heat, inasmuch as it appears from a couple of hours to half a day after the exposure, whilst, as we know, a burn appears at once; further, it is followed by a pigmentation of the skin. Microscopically it differs, as I have proved by experiments on tadpoles,<sup>11</sup> from all other forms of inflammation, inasmuch as the red blood corpuscles are much contracted.

Erythema solare is most frequently observed in the spring and in fair persons—that is, when the pigment of the skin is impoverished. The pigment of the skin is, in fact, principally a defence against the inflammatory influence of the chemical rays, and we are doubtless right in supposing that this is still the principal reason for the negro's blackness, and for the circumstance that the skin of the different races becomes darker the nearer we approach the equator.

It will then be seen that the chemical rays are capable of producing an inflammation of the skin, and that Nature finds it necessary to protect even a healthy skin against these rays; it is, therefore, not surprising that when diseased, as for instance in small-pox, the skin requires still more protection. This protection is best and most pleasantly given by excluding the chemical rays, as I have recommended, and allowing the light to be filtered into the patients' room through red glass or red curtains.

It is curious to observe that many of the methods which have been employed to prevent pitting in small-pox have had as a main feature the exclusion of light, and in all probability their utility has been due to this circumstance. I may mention painting the skin with tincture of iodiform, with strong solutions of nitrate of silver, and in particular the covering of the face with a mask, or with compresses. Great stress has been laid upon the fatty substance or other matter with which these compresses should be impregnated, but this question is of secondary importance, the main point being the exclusion of light. Various authors, among others Stokes,<sup>12</sup> have observed that scars were formed only where the mask or compress left the face uncovered, but not where the skin was entirely covered. Stokes was of opinion that this was owing to the action of air upon the skin; his observations were excellent and correct, only he attributed to air what was due to light.

The objection may be brought forward that the faint light which comes into a sick room would not be sufficient to cause an inflammation of the skin or to increase the inflammation already present. To this we can reply that the skin in certain cases and under certain circumstances is remark-

ably sensitive to the influence of the chemical rays. There are many accounts of such particularly sensitive skin; for instance, Veiel<sup>13</sup> mentions a lady whose skin was so sensitive that even when sitting in her room the side of her face nearest the light became slightly inflamed. Veiel advised her to wear a thick red veil with favourable results.

Another interesting circumstance is that cattle and sheep which have eaten buckwheat get an eruption when they stand in the sunshine or ordinary light, but not when they stand in dark sheds. This is known to farmers, and has also been made the subject of scientific investigation by Virchow and Wedding.<sup>14</sup> It is interesting to learn that it is only light-coloured cattle which are subject to the inflammation, not the pigmented, and a white cow which Wedding tarred on the one side did not get the inflammation on that side, but only on the other. This is another good example of the protective qualities of pigment.

It is, then, evident that ordinary daylight can produce an inflammation of the skin where there was none previously. It is, therefore, much easier to understand that ordinary daylight can increase an inflammation already existing, as is the case in small pox.

#### RESULTS OF THE USE OF RED LIGHT IN SMALL-POX.

After the favourable results of Lindholm and Svendsen mentioned above had been published, the method was tried in various places, and there are already numerous reports on the subject from the following various authors: Feilberg<sup>15</sup> (Copenhagen), Benckert<sup>16</sup> (Göteborg), Strandgaard<sup>17</sup> (Amager, Denmark), Krohn<sup>18</sup> (Saxkjöbing, Denmark), Mygind<sup>19</sup> (Nakskov, Denmark), Oettinger<sup>20</sup> (Paris), and J. W. Moore<sup>21</sup> (Dublin). The results obtained by all these authors<sup>22</sup> have been extremely favourable. The total number of patients treated by them was about 70, and the method failed in only one case (Benckert).

It must be observed that these reports are of considerable value, as the authors as a rule were evidently exceedingly sceptical before they had tried this strange method. Some few of them have confined themselves to mere reports of the history of the cases, and have otherwise been extremely reserved in their expressions of opinion; some (Feilberg, Svendsen) have for certainty's sake made controlling experiments; others (Oettinger, for instance) chose the most severe cases to experiment with.

CASE.—The illustration on p. 1414 shows the condition of the face of C. B., aged 48, on the eighth day of the disease. She was treated in the Copenhagen Small-pox Hospital, and was kept in red light from the third to the twelfth day of the disease. She was discharged twenty-four days after the day on which the photograph was taken, and then did not present any pitting whatever. The temperature chart, which is also reproduced, shows that there was not any secondary fever whatever.

By comparing these reports and the results obtained, the following view of the action and importance of the treatment will be obtained: When the patients come under treatment early enough—before the fourth or fifth day of the disease—suppuration of the vesicles, even in unvaccinated persons and in cases of confluent small-pox, will be avoided—1 exception out of about 70; as a rule, the secondary

<sup>4</sup> *Comptes rendus de la Société de Biologie*, 1859, p. 63.

<sup>5</sup> Ueber den Einfluss des Lichtes auf die Haut, *Hygiea*, Festband No. 3.

<sup>6</sup> Ueber das Pigment der menschlichen Haut, *Monatsh. für praktische Dermatologie*, 1885, p. 235.

<sup>7</sup> Ueber den Einfluss des Lichtes auf die Haut, Stuttgart, 1891.

<sup>8</sup> *Archives d'Ophtalmologie*, 1889, p. 97.

<sup>9</sup> Observations on the Influence of Solar Rays on the Skin, *BRITISH MEDICAL JOURNAL*, September 29th, 1894.

<sup>10</sup> Om Lysets Indvirkning paa Huden, *Hospitalstidende*, July 5th, 1893.

<sup>11</sup> Om de kemiske Straalers skadelige Virkning paa den dyriske Organisme, *Hospitalstidende*, November 1st, 1893.

<sup>12</sup> See J. W. Moore, *Textbook of the Eruptive and Continued Fevers*, Dublin, 1892, p. 116.

<sup>13</sup> Ueber einen Fall von Kczema solare, *Vierteljahresschrift für Dermatologie und Syphilis*, 1887, p. 113.

<sup>14</sup> *Verhandlungen der Berliner Gesellschaft für Anthropologie*, 1887, p. 57.

<sup>15</sup> Behandlung af Kopper med Udelukkelse af Dagslysets kemiske Straaler, *Hospitalstidende*, No. 27, 1894.

<sup>16</sup> Om Smitkoppers Behandling med uteslutning af Ijusets kemiske Straaler, *Hygiea*, vol. lvi, 1894.

<sup>17</sup> See Finsen: Les rayons chimiques et la variolo, *La Semaine Médicale*, 30 Juin, 1894.

<sup>18</sup> Tre Tilfælde af Kopper behandlet "rødt Lys," *Hospitalstidende*, October 3rd, 1894.

<sup>19</sup> See Finsen: Die Behandlung der Variola in rothem Licht. *Neissers stereoskopisch-medicinische Atlas*. Zweite Lieferung, 1895.

<sup>20</sup> Traitement de la variolo par le procédé dit "la chambre rouge," *La Semaine Médicale*, Mal 30, 1894.

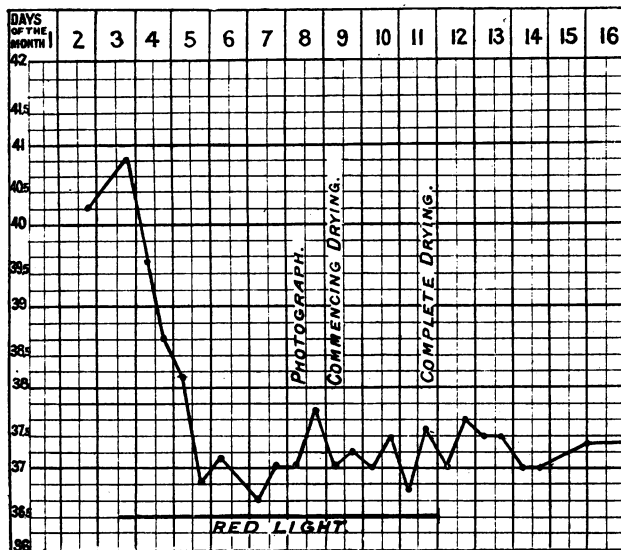
<sup>21</sup> A Case of Small-pox and its Lessons, *The Dublin Journal of Med. Science*, December, 1894, p. 489.

<sup>22</sup> Besides the authors above mentioned Jubel-énoy of Paris (*Bull. et Mém. de la Soc. Méd. des Hôp. de Paris*, December 14th, 1893) has also made use of the red-light treatment. His results were not so favourable as those elsewhere obtained, but still so good that he recommends the method. I have not mentioned him among the other authors, as he did not carry out the treatment quite correctly (see *La Semaine Méd.*, Juin 30, 1894).

fever does not appear, but even when it does the temperature is lower and the fever of shorter duration than is usually the



Case of Small-Pox: Treated in Red Light; no subsequent pitting.



case. As a result of the absence of suppuration the disease becomes of shorter duration and less dangerous, as the greater number of complications do not show themselves; further, the patient escapes pitting. Some authors have observed "minute scars" on the nose and fingers in some few cases; but this only proves that what are generally known as "pock marks" are done away with. It would seem that children—perhaps on account of their fine epidermis—are more completely exempted from scars than adults. It must, however, be mentioned that this treatment does not prevent the skin becoming hyperæmic where the vesicles have been; the hyperæmia, however, disappears after six to eight weeks, and it is then impossible to see that the person in question has suffered from small-pox.

From the above it is evident—so much so that I need hardly point it out—that this treatment is only a skin treatment; upon the infection itself it has no influence, or at least so slight a one that it is not worth noticing. Should the patient come under treatment after the fifth day of the disease, it is uncertain whether the suppuration can be avoided; sometimes this is the case, sometimes not; but it would appear that in such cases the treatment renders the suppuration less severe and less malign. Some authors (Feilberg) advise the use of the red light even when the suppuration is commencing.

#### METHOD OF CARRYING OUT THE TREATMENT.

As far as the carrying out of the treatment is concerned, the following main points must be noticed:

1. The exclusion of the chemical rays must be absolute; even a brief exposure to daylight may produce suppuration and its sequelæ. In other words, the skin during small-pox is as susceptible to daylight as a photographic plate, and must be kept from the chemical rays in the same way and almost as carefully. If, therefore, red window glass is employed, it is necessary for it to be of a deep red colour, and if curtains are used, they must be very thick or in several layers. When the patient takes his meals, or during the physician's rounds, artificial light—for instance, faint candle light—may be used without any danger. As even a brief exposure to daylight can produce suppuration, and as this treatment is somewhat burdensome for the nurses, so that they are often tempted to draw back the curtains, it is necessary when they cannot be depended upon to take care that the treatment is carried out correctly, for instance by nailing the curtains.

2. This method does not prevent but allows the employment of any other treatment which may be considered necessary.

3. The treatment should be commenced as early as possible; the nearer the commencement of the suppuration the smaller the chance of success.

4. The patient must remain in the red light until the vesicles have dried up.

#### A CASE OF MYOMATA OF THE UTERUS, WITH PREGNANCY OF FIVE MONTHS' DURATION: TOTAL EXTIRPATION OF UTERUS AND TUMOURS: RECOVERY.

By MURDOCH CAMERON, M.D.,

Professor of Obstetrics and Gynecology in Glasgow University; Physician for Diseases of Women, Western Infirmary.

THE following case is of interest from the rapid development of the tumours during pregnancy, and the almost complete obstruction of the parturient canal caused by them:

Mrs. C., aged 36, was admitted to the Western Infirmary under my care on July 16th, 1895, complaining of great distension of the abdomen. The patient considered herself about five months pregnant, but as the abdomen was so much distended she consulted me regarding her condition. She stated that she had always enjoyed the best of health until the spring of the present year, that menstruation commenced at the age of 15 and continued perfectly normal and regular until February, 1895, that she had been married for