fell from his back, and was suddenly forcibly flexed. Examination showed flexion deformity at the proximal interphalangeal joint, with marked prominence of the head of the proximal phalanx on the dorsal aspect, and as the finger was passively straightened the middle phalanx became dislocated volarwards. X-ray examination verified the subluxation of the joint. The displacement was reduced under gas, and the finger fixed on a Böhler's splint in moderate flexion. Three weeks later, on removing the splint, the subluxation immediately recurred and the joint again assumed the flexed position. Operation revealed the typical buttonhole tear in the central band, but in this case the distal tag of tendon attached to the base of the middle phalanx had become turned in between the articular surfaces and was responsible for the persistence of the subluxation. Repair was carried out as described and immobilization maintained for four weeks. Three months later he has 20 degrees limitation of extension with full flexion and free active movements in both directions. There is no disability in his work as a tractor driver, but the result might have been better had the true nature of the lesion been recognized at once.

We wish to express our thanks to Mr. D. S. Middleton for allowing us to treat these cases under his supervision, and for permission to report them.

BIBLIOGRAPHY

- Mason, M. L. (1930). *Surg. Gynec. Obstet.*, **50**, 611.
Milch, H. (1931). *Amer. J. Surg.*, **13**, 244.

PROTECTION OF THE SKIN AGAINST LIME

BY

G. C. PETHER, M.D., M.R.C.P.

*Group Medical Officer, Imperial Chemical Industries
(Lime Group)*

In the last two years I have had occasion to try various remedies and preventive measures for dealing with burns of the skin and eyes caused by lime. The workers in our local industry are engaged in the quarrying of limestone, which is burnt in kilns adjacent to the quarries, various grades and qualities of lime being produced. The kilns are fed at the top with limestone, coke, and coal, and the finished lime and debris is withdrawn from apertures at the bottom of the kilns by hand and also with the aid of rakes. The lime appears in fragments of all shapes and sizes up to pieces perhaps nine inches through the long diameter and weighing several pounds. Skilled workmen are able to detect and remove partly burnt pieces of stone which are known as "bullheads." These latter and the "smalls" are dealt with separately, while properly burnt large pieces are sold at the best prices.

The various products described are loaded into small trucks, which are later emptied into lorries or railway wagons. It is clear that in such procedures large quantities of lime dust and small fragments will be cast into the air. These will settle on the clothes and skin and in the eyes of the workmen, and will be both mechanically and chemically irritating. In addition, wherever lime comes into contact with moisture the exothermic reaction whereby it is slaked may be sufficiently violent to cause considerable burning. I propose at a later date to describe the methods devised for dealing with lime in the eye. I will here confine myself to the treatment of the skin.

Protective Methods

In the past, various methods have been tried to mitigate the damage caused, and protection against wind and

weather has been provided wherever possible. Masks are worn to protect the nose, and goggles are available for the eyes. Some of the workers, after an initial period of distress, appear to acquire a certain tolerance to the lime, both in the eyes and in other exposed parts, whilst others need protection most of the time. A piece of material tied loosely over the mouth and nose satisfies many. The protection of the skin itself presents a difficult problem. The handling of lime both dries and hardens the skin to a marked degree, and any perspiration inevitably causes a brisk reaction and local burning. This risk is also present on wet days when gusts of wind blow rain into the loading platforms.

I discovered that many remedies of a fatty nature, such as tallow, lanoline, and olive oil, had been applied to the skin as a protection. These are unsuitable, since they cause lime dust to adhere where previously it would have brushed off, and, in addition, they act somewhat as does theatrical grease paint, by checking the cooling of the skin by insensible perspiration. As a result small collections of sweat are formed which later react suddenly and violently with the lime. In considering these facts I was struck by one factor that appears to have been insufficiently stressed: the rate of evolution of heat when lime meets water. It is clear that if this reaction can be slowed down sufficiently no burning will occur. By a large-scale slaking of lime a temperature of 300° C. may easily be attained. So far as the skin is concerned the most common lesions, apart from a general hardening, thickening, and fissure formation, are small scattered superficial ulcers and more definite burns of larger extent. These, particularly if on the hands and fingers, are very crippling and make work difficult or impossible. Infection may be superadded on the original lesions with an impetiginous picture and perhaps more gross and deep-seated infection, particularly if a fissure has been the portal of entry. The men employed are reasonably clean and healthy, but even if they wash their hands on leaving work these are probably as contaminated as ever by the time they have removed their lime-impregnated clothes at home.

Use of Talc Powder

Though attention to washing facilities helps considerably, it is yet no protection against the burns and sores caused by the lime. To prevent these or diminish their severity I have introduced the use of plain talc powder, which is shaken on the exposed parts from canisters with "pepper-pot" tops. This may be repeated several times a day if necessary.

Before starting this procedure I envisaged the following results:

1. By its well-recognized cooling power talc would reduce the temperature of the skin, thus diminishing sweating.
2. Any rain or sweat would mix with the powder and form a paste, thus reducing the moisture available for reaction with any lime present.
3. The paste, when dried, might form a protective film which would permit lime to make but gradual contact with the skin and its moisture.

The three effects described all serve to slow down the reaction between lime and water so that the heat developed is evolved gradually and burning does not occur. I have even advised the use of powder for the treatment of the scattered sores already described, and this has often healed them without any other remedy. This holds good particularly for the early and relatively uninfected

lesions. My attention was drawn to one important factor: the collars of these workers often become encrusted with a mixture of dried sweat and slaked lime, which has a marked abrasive effect and often contributes to the development of lesions on the neck. The frequent changing of the collar and the use of strips of lint, however, greatly reduce the damage.

It is stated by Antonibon (*Bollettino di Oculistica*, April, 1931) that lime in the eye is damaging both by reason of the hydroxyl ion which causes colliquation of the corneal tissue and also by the action of the calcium ion which, in the first place, is adsorbed on to the protein particles. It is likely that similar changes occur in raw areas of the skin created by and subsequently exposed to lime. Therefore it is not surprising that such sores are slow to heal, and this fact should incite one to use all possible preventive measures.

Several reports have been received from employees describing the benefit they have derived from talc used in this manner.

Clinical Memoranda

Epidemic Catarrhal Jaundice in School Children

A very interesting account of this disease, written by Dr. Lisney (1937), appeared in the *British Medical Journal* of April 3 last. It referred to an epidemic in Leicestershire in 1936. Some further notes of an epidemic in Gateshead may be of interest. The epidemic seems to be similar to the one described by Dr. Lisney and to those referred to by Morgan and Brown (1927) in their account of the disease. At first it was confined to the children in one school, but now several other children have been attacked in various parts of the town. Up to the present thirty-one children have been affected in the school in which the outbreak commenced and thirteen in six other schools.

INCIDENCE

Forty-four cases have been investigated, and all of them are children of school age, except two children too young to go to school and one parent. So far as I know this is the only adult who has been infected in the present epidemic. Of the forty-one school children fourteen are boys and twenty-seven are girls, and the following table shows the age incidence:

Age	Male	Female
5	2	3
6	2	7
7	3	5
8	—	4
9	4	5
10	1	2
11	2	1
Total	14	27

There were only two instances where more than one member of a family was infected. In one of these a school child infected her younger sister and her father.

The epidemic began on January 13, 1937, and still continues (September 25), although fewer cases are now being notified. There is no reason to suspect that the milk or water supply is at fault. The public water supply is filtered and chlorinated, and is above suspicion. The school milk supply is pasteurized, and conforms to the tests for pasteur-

ized milk. It is from the same source as in other schools which are not affected by the epidemic.

All the evidence points to infection by personal contact. It is difficult to estimate the incubation period. The first child to contract the disease left school on January 13 and the second on January 26. After that cases occurred at intervals of three or four days until nineteen children had been affected. Cases Nos. 19 and 20 give some indication of the probable incubation period, for No. 19 left school on March 8 and No. 20 (who could not have been in contact with No. 19 after that date) contracted the disease on April 6 (twenty-nine days after), which agrees with the period of one month given by Dr. Lisney.

SYMPTOMS AND SIGNS

All the cases so far have been slight. The onset is gradual and at first the child complains of slight abdominal pain, with sometimes nausea and loss of appetite. After five or six days vomiting occurs; this has been present in all cases, and in many of them it was very severe. There may or may not be a rise of temperature. A day or two after the vomiting attack jaundice appears, first in the conjunctivae and then spreading to the skin of the face, neck, trunk, and limbs according to the severity of the illness. In some cases it is limited to the eyes and face. In severe cases there is itchiness of the skin. When jaundice appears the faeces become very pale and the urine dark. After about a week the jaundice disappears and the patient is quite well. In nearly all the cases seen the patient when convalescent was stated to eat ravenously. There were no complications.

BACTERIOLOGICAL INVESTIGATION

The faeces of seven cases were examined, but revealed nothing of importance except that in one case an atypical non-lactose-fermenting organism was found. In this case the sample was taken before the appearance of jaundice. The urine of two cases was inoculated into guinea-pigs, but in neither case did they show signs of jaundice and no leptospira were found. Bacteriological examination of milk supplied to schools revealed nothing of importance.

SUMMARY AND CONCLUSIONS

The present epidemic in Gateshead is similar to those referred to above. The disease occurs chiefly in children aged 5 to 10 years, and is spread by personal contact. The incubation period is probably about four weeks. The premonitory symptoms are often slight, and during this period when the child is still at school he is apparently infectious to others, and it would seem advisable that during an epidemic all school children who have attacks of vomiting should be kept at home for four days to see if they develop jaundice.

The above brief account of epidemic catarrhal jaundice at present attacking children in Gateshead is published in the hope that others may also give details of epidemics of the disease in their districts, and particularly in the hope that some method of investigation may be suggested which would lead to the discovery of its causal organism.

I am greatly indebted to Dr. J. Grant, medical officer of health for Gateshead, for permission to publish this short account of the present epidemic of catarrhal jaundice in that town.

BERTRAM SERGEANT, M.B., B.S., B.Hy.,
Chief Assistant School Medical Officer
and Assistant Medical Officer of
Health.

Gateshead.

REFERENCES

- Lisney, A. A. (1937). *British Medical Journal*, 1, 703.
Morgan, M. T., and Brown, H. C. (1927). *Epidemic Catarrhal Jaundice*. Report No. 42 issued by the Ministry of Health.