prevented him from working for the past eleven months. My colleague informed me that he had exhausted his medicinal remedies upon the man without success. The patient had also been sent to another hospital, where he had been operated on for bilateral inguinal hernia in the hope of curing the pain. This measure also failed to relieve him. Examination revealed that there was neither tenderness nor increased resistance of the muscles covering the right iliac fossa. Careful questioning disclosed that the pain had arisen while he was employed in "ditching," and that the clay was sticky and often failed to leave the shovel when being thrown up from the ditch. Further examination elicited tenderness above the anterior part of the iliac crest, and finger pressure in this region increased the pain in the right iliac fossa. Injection of the tender region abolished the iliac pain, and the man expressed himself as being completely recovered. Next day, however, he complained of an ache in the right half of the upper abdomen. A tender point was found at the tip of the tenth costal cartilage. This site was injected, when the pain and tenderness immediately disappeared. The man was kept in hospital a further two days for observation and was able to return to work a week later.

Fifteen days after operation for compound comminuted fracture of the patella a plumber, subject to chronic bronchitis, developed intercostal pain which prevented coughing. The temperature began to rise, and by the seventeenth day coarse rales were heard at the base on the painful side. The operation wound having healed by first intention, and neither redness nor tenderness being present in the neighbourhood, I concluded that the pyrexia was due to the pulmonary condition. An injection of 4 c.cm. of novutox into the fascia at the painful site restored the power of painless coughing. Much sputum was expectorated during the next forty-eight hours, during which the temperature gradually fell, reaching normal on the twenty-first day.

Since writing these notes the Editor has drawn my attention to papers bearing on the subject in the *Journal* of February 12, 1938—namely, "Suggestions relating to the Study of Somatic Pain," by Sir Thomas Lewis (p. 321), and "A Preliminary Account of Referred Pains arising from Muscle," by J. M. Kellgren (p. 325).

I am indebted to Dr. Harold Gardiner-Hill, F.R.C.P., for kindly criticism and advice.

CHRONIC BLEPHARITIS IN CHILDREN

ITS TREATMENT WITH ANILINE DYE COMPOUND

BY

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The primary object of this investigation was to effect a comparison between the treatment of chronic blepharitis in school children with the use of ung. hyd. ox. flav. in a certain group and an aniline dye compound in another group. It was found, however, that in a large proportion of the cases "golden eye ointment" had previously been tried at one time or another, and this fact, coupled with the difficulty experienced in inducing the patients receiving this form of treatment to attend the clinic as regularly as was necessary, led me to adopt the "blue compound" (aniline dye) treatment in all cases and to study its effects. This study was extended to cover the association with blepharitis of seborrhoea, visual defects, and subnormal nutrition.

The children treated were not merely those found at routine medical inspection, but comprised all the known cases of chronic blepharitis in the Lancashire County district of which I was medical officer of health at the time. There were sixty-eight cases in a total school popu-

lation of 7,317, giving an incidence rate of approximately 1 per cent.; forty-four of these attended the clinic during the treatment period of eight weeks.

References to brilliant-green treatment of blepharitis are meagre (Tulipan, 1936; Krylov and Rostovtsev, 1934), and therefore the present study may be of interest. Tulipan stated that

"a 1 per cent. aqueous solution of brilliant green painted on the eyelids daily for several weeks has proved efficacious in the treatment of a few patients with blepharitis associated with sycosis vulgaris."

Aetiology and Pathology

Chronic blepharitis is commonly regarded as a non-infective disease of the eyelashes, the causal organism being a staphylococcus (Barber, 1934). Gurd (1939) and Abu-Saif (1934) mention two types: a squamous and an ulcerative. While Gurd associates the occurrence of seborrhoea and dandruff with the squamous variety, Dowling (1937) says that Sabouraud draws a sharp line of distinction between seborrhoea and dandruff in relation to blepharitis. Dowling therefore speaks of seborrhoeic blepharitis (Greenbaum, 1934) and a second severe type, or sycosis of the eyelashes. Barber (1934) refers to adolescent seborrhoea and a severe type in childhood. Clark (1937) draws a distinction between seborrhoeic blepharo-conjunctivitis occurring in adolescent or adult life, and blepharitis marginalis, a mild disease "occurring in poorly nourished children." His adolescent type is "almost always associated with seborrhoeic dermatitis of some other part of the body, usually of the scalp, which is characterized by dandruff or alopecia, or both."

In the present cases, all of them school children under 14 years of age, no such type was found, but the cases fell naturally into two groups:

(a) A mild type, characterized by flaky incrustations on the lid margins, slight swelling of the lids, but no ulceration, which I shall call the squamous type; and

(b) A severe form, characterized by small ulcers at the roots of the eyelashes, swollen and discoloured lid margins, destruction of lashes, and occasional conjunctivitis, which I shall refer to as the ulcerative type.

I was unable, although all cases were examined for it, to prove any preponderance of either dandruff or seborrhoea of the scalp in either category. Dandruff was no more prevalent than in any group of children selected at random.

Again, it is mentioned by various writers that blepharitis is a disease of badly nourished children. Almost all of my cases could be classified under the modern nutritional Standard B—that is, within the limits of normality (1 Standard A and 3 Standard C). Therefore in no case was cod-liver oil and malt given as part of the cure. All cases were examined by Dr. McCann, consulting ophthalmologist to the Lancashire County Council, but in only two were visual defects found. These were corrected; but I feel, like Gurd (1939), that "errors of refraction should be corrected, but this alone will not alleviate the condition." Somerset (1939), in criticizing the report of the Committee of Inquiry into Problems connected with Defective Vision in School Children (some 2,625 cases), gives a very exhaustive review of 300 cases at White Oak Hospital, London, and arrives at the conclusion that "there is no significant difference in the spherical refractive error in children suffering from blepharitis in comparison with the normal child," and that "causes other than errors of refraction must be sought for in blepharitis of children."

Finally, in order to prove the value of early treatment I endeavoured to show that the milder type of blepharitis could pass into the ulcerative or severe form, but honesty

compels me to admit that the two categories were quite sharply defined and that the results of treatment were different in the two types.

Method of Treatment

The preparation used on all cases was a paste consisting of:

Gentian violet	..	..	..	..	..	$\frac{1}{2}$ %
Brilliant green	..	..	..	..	..	$\frac{1}{2}$ %
Adeps lanae	..	..	..	..	ad	100

The paste, which is of a dark purple hue, is applied by means of a soft camel-hair brush to the roots of the eyelashes, after the crusts have been removed with boric lotion. Care is taken not to allow any paste to get into the conjunctival sac, but even if a trifle does so no harm results, so that the paste can safely be applied by the child's parent, who usually errs on the side of safety. The paste colours the skin temporarily, but is easily washed off. The children are intrigued by the general "unaesthetic" effect and show quite a keenness to carry out treatment for the first week or two, hence the value of early success.

The "blue compound," as we named it, is applied twice daily, morning and evening, and therefore children need not remain away from school; but the results are better if they do so for the first week at any rate, as a few showed a certain sensitiveness to the blue coloration being seen by others. After a week or so, however, they ceased to worry about this. (Smoked glasses could be worn if need be.) In the case of the ulcerative type, after the first period of treatment had proved fruitless the ulcers were cleaned first with hydrogen peroxide and the dye was applied in a watery solution (guttae pyoktanin, 5 grains to 1 fl. oz.). I am indebted to Dr. McCann for permission to use the latter method, which he has employed for some time.

The children reported to the clinic once a week for two months or until clear of disease; they were then allowed to go free of treatment for nine months and were subsequently reviewed.

Results

Of the forty-four cases treated thirty-seven were mild or squamous and seven severe or ulcerative. All the squamous cases were free of symptoms after eight weeks, but the ulcerative cases showed little or no improvement.

Table showing Rate of Cure of the Squamous Type
Week by Week

Weeks :	1st	2nd	3rd	4th	5th	6th	7th	8th
No. of cases cured	5	8	8	6	2	1	3	4
	35 %		38 %		27 % approx.			
	73 % approx.							

The practical importance of the above figures lies in the fact that if an early successful issue was not obtained the child and parent became tired and treatment thereafter tended to be somewhat spasmodic.

Ulcerative Type.—Of the seven patients under this heading five proved to be very bad attenders and would not do as requested. They had relapsed on many occasions under "golden eye ointment," and the blue compound, while it proved useful in mitigating the disease, did not show the striking success which it did with the milder type of case. Of the two remaining ulcerative patients one certainly showed a marked improvement by the end of a month, and thereafter failed to attend, while the last was induced to attend daily for treatment with hydrogen peroxide and gentian violet solution. The latter patient

was discharged free of ulcers after two weeks of daily treatment.

The lack of response of the ulcerative type of case to weekly supervision and the response of the one good attender to daily treatment show that a more intensive method is required. The blue compound will clear the eyelashes, but only under what approximate to hospital conditions, with the case under constant supervision. Indeed, the fact that so many intensive methods have been applied by others—namely, 2 per cent. silver nitrate (Gurd); potassium nitrate, copper sulphate, etc. (Sabouraud, 1934); adrenaline chloride and resorcin (Clark); x rays (Greenbaum)—points to the need for hospitalization of the ulcerative type. I wish to put forward a strong plea that patients with this type of chronic blepharitis should not be treated at clinics or under haphazard conditions of attendance as out-patients anywhere. It is therefore important for medical officers to recognize the differing clinical types early on and to treat accordingly.

Abu-Saif, in utilizing x rays, has invented special forceps fitted with shields for protection of the eyes against the rays. He states that "improvement begins to take place one week after the last sitting. . . . Epilation begins about the end of the second week and is complete by the twenty-first day."

The obstinacy and resistance to treatment of the ulcerative type are clearly recognized by all writers, no matter what line of treatment is adopted. There is no need to hospitalize all blepharitis patients, as the results of treatment of the present cases show. Hence the need for differentiation of the two types by the medical attendants.

Subsequent Review of Cases

The investigation was closed after two months and the patients were allowed to attend school as normally for the next eight or nine months. Then a review of those treated early was made, with the following results:

Thirty-five cases out of the total of forty-four treated reported for review (twenty-nine squamous, six ulcerative).

Squamous Type.—The number of squamous cases reviewed was twenty-nine. Twenty-six of these were found still free of disease, and three (10 per cent.) had relapsed.

Ulcerative Type.—Of this group one case was free of disease after a second intensive course and five cases still showed symptoms. Only one patient had been induced to undergo daily treatment at the clinic.

Note on Relapsed Cases.—It was noted that the three relapses of the squamous variety did not occur in cases which had cleared up in the first week or two of treatment—showing that if treatment is allowed to become spasmodic and long-drawn-out its effectiveness is lost.

Summary and Conclusions

1. A review has been made of some forty-four cases of chronic blepharitis existing in a school population of 7,317 and of the results of treatment with an aniline dye compound.

2. The cases were found to be classifiable into two groups: (a) a mild type—the squamous variety; (b) a severe type—the ulcerative variety.

3. Aniline dye compound is an effective method of treatment in blepharitis squamosa, but is effective in blepharitis ulceroza only under in-patient hospital conditions.

4. It is suggested that the latter category should be treated in hospital and on no account at a school clinic.

5. In view of the latter remark, it is considered important for medical officers to recognize the line of distinction between the two types and to treat accordingly.

6. I have used the aniline dye compound mentioned as "blue compound" for at least four years and have never seen any complications, such as inflammation of the

conjunctivae, result from its repeated use. It may be regarded as a safe method of treatment.

7. No definite correlation between squamous or ulcerative blepharitis and seborrhoea was established.

8. No definite correlation was found between blepharitis and the nutritional standard, and cures were obtained without the use of cod-liver oil and malt. It is important to note, however, that only one case fell into the nutritional category A, and one must also bear in mind the reported excellent results of experimental health meals (Board of Education, 1938).

9. No definite correlation was observed between blepharitis and visual defects.

10. The mild type of the disease was never found to change into the severe type; cases appeared to fall into two quite clearly defined groups.

11. The existence of blepharitis in 1 per cent. of a school population and the great interference with education caused by it demand that some consideration be given to the disease, and particularly to the ulcerative variety.

I wish to express my thanks to Miss F. E. Ellerington for her assistance in the compilation of case reports, to Dr. McCann for permission to quote his method, and to Dr. F. Hall, county medical officer of health, Lancashire, for permission to publish this paper.

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CHRONIC ACETANILIDE POISONING

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Sulphaemoglobinaemia as a cause of cyanosis has been recognized for many years and has recently been given prominence on account of the frequency with which it appears in association with sulphonamide therapy. That it may also be produced by antipyretics of the aniline group is not so well known. Snapper (1925) drew attention to the occurrence of cyanosis from sulphaemoglobinaemia following the continued use of aniline antipyretics, and since then several cases demonstrating this toxic effect have been reported. In a paper by Lundsteen, Meulengracht, and Rischel (1938) eleven cases of cyanosis following the administration of acetanilide are described. In one of these cases the authors have demonstrated a coloured derivative of aniline in the blood, and believe that this pigment is largely responsible for the cyanotic appearance of the patient and for the dark colour of the drawn blood, which persists in spite of exposure to the air. It has been recognized for some time that a condition of addiction to the use of acetanilide may develop, and that in individuals who have become thus addicted chronic cyanosis is prone to develop.

The following case illustrates several features which are of interest in view of Lundsteen's findings.

Case Report

A housewife aged 55 was admitted to the Aberdeen Royal Infirmary on account of unexplained cyanosis. Ten days before admission she noticed that her lips were blue; this blueness increased in intensity and her hands became "slate-coloured." The cyanosis was not associated with any other symptom, but she consulted her doctor about it, and he advised her to attend hospital. It transpired that since girlhood the patient had suffered from frequent attacks of right-sided frontal headache, often associated with a sensation of flashing in front of the eyes and followed by vomiting of bile-stained material, which relieved the headaches. In recent years these attacks had become more frequent, and a year ago she consulted a chemist, who gave her powders consisting of acetanilide and phenazone, four grains of each, and caffeine, two grains. These powders relieved the headache and gave her a feeling of well-being, and for the past year she had been taking "about three powders a day." She admitted that the powders "grew on her," and said that when she felt depressed she took a powder, which made her feel better and "things were more cheerful." Shortly before the onset of the cyanosis she had taken considerably more than three powders daily. Her previous history was that, apart from headaches, she had no illnesses. Menstruation had stopped two years previously, and she had since suffered from occasional attacks of flushing.

On examination the patient was seen to be a well-nourished rather stout woman, deeply cyanosed. Her skin was a striking slaty-grey colour, and the cyanosis was especially marked in the lips and mucous membranes. She was afebrile—temperature 98.4°; the pulse rate was 84 and the respirations 20. The pulse was regular, of regular tension, and the arterial wall was soft. The blood pressure was 168/96. The heart was not enlarged and sounds were pure; no murmurs could be detected and there was no evidence of congenital or valvular heart disease. The chest moved equally on both sides; no abnormality of the respiratory sounds or other abnormal physical sign was detected; in particular, no evidence of mediastinal neoplasm was found. The tongue was blue in colour and furred. The throat, apart from the dark colour, was healthy. The abdomen was lax; no tenderness was detected on palpation. No palpable mass was found. The liver and spleen were not enlarged. The pupils were equal, and reacted to light and accommodation. There was no abnormality in the function of the cranial nerves, no loss of power in the limbs, and no sensory impairment. All the tendon reflexes were active and equal. Abdominal and plantar reflexes were normal in type. On examination the fundus of the eye was healthy. Radiological examination of the chest showed no abnormality of heart or lungs.

Laboratory Findings.—The venous blood was dark and remained chocolate-coloured in spite of shaking in a wide-

FIG. 1.—The absorption curves of the blood at the red end of the spectrum: A, on admission; B, after two weeks; C, after four weeks.

mouthed flask with free access to the air. On spectroscopic examination it revealed the presence of an absorption band at the red end of the spectrum occupying the position