fired at from inches distant corresponding with the numerals below. Of the two moulds without battledress covering, the cavity of that produced at 6 inches measures 3 by 3 by 2 inches, while that produced at 10 inches measures 2 by 2 by 1 inch. Of the moulds covered with battledress, those at 4 inches and 6 inches show a defect produced in the cloth while the others show flecks of unburnt powder and wad on the surface.

Fig. 2 shows primarily the extent of damage to the molds after firing through the battledress covering. At 4 inches the cavity measures 3 by 3 by 3 inches; at 6 inches it measures 2 by 2 by 1½ inches; at 8 inches it is 1¼ by 1½ by 1¼ inches; at 10 inches it lightly penetrates the paper and abraids the surface to the depth of ½ inch. In all cases the cavities contain fragments of the wad and battledress and flecks of unburnt powder.

The lower line of each figure from left to right shows a live .303 cartridge, a blank .303 cartridge, the casing of a blank round after firing, a blank round opened to show the contents, the compressed cardboard wad and the discs of smokeless powder from a blank round.

This presentation is put forward merely as a matter of interest and only two conclusions are suggested.

(1) Wounds produced by the discharge of blank cartridges are of much greater extent than was heretofore imagined.

(2) Wounds of varying degree will probably be produced by a .303 inch blank cartridge discharged from a Service rifle up to 10 to 12 inches from the target.

In conclusion I wish to express my appreciation to Colonel J. A. MacFarlane, Surgical Consultant, Canadian Army Overseas, my Commanding Officer, Colonel G. Earle Wight, and the Chief of the Surgical Division, Lieutenant-Colonel S. J. Martin, for permission to forward this article.

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EXFOLIATIVE DERMATITIS FOLLOWING PHENOBARBITONE ADMINISTRATION.

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The extensive use of phenobarbitone in medical practice makes it particularly important that attention should be called to the rare but nevertheless serious complication of exfoliative dermatitis which may arise in the course of its administration. Of twelve recorded cases, nine terminated fatally. Wile and Benson, who themselves reported two of these cases, state that
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though few cases have been described in the literature, such reactions are by no means uncommon, fatal cases being allowed to go undiagnosed or, if recognized, not recorded.

The commonest cutaneous manifestation of phenobarbitone intolerance is an erythematous macular rash. Sexton, Pike and Neilson emphasize the necessity of withdrawing the drug at the first appearance of such a rash. Even then a severe constitutional reaction may occur but a fatal outcome will probably be avoided. Moss and Long have lately described two further cases of exfoliative dermatitis due to phenobarbitone. Both patients were alarmingly ill but ultimately made a good recovery. They, too, think that many cases are missed. A history of drug ingestion is not easy to obtain and phenobarbitone is probably the cause of many cases which are vaguely described as "atypical erythema exudativum multiforme."

An interesting feature in the case here reported was the notable symptomatic improvement which followed the administration of nicotinic acid.

Case History.—The patient, a serjeant, aged 26, with four years' military service and no history of previous illness, was admitted to a military hospital on February 27, 1943, with a purpuric rash and pyrexia of fourteen days' duration. Two months previously he had developed a sore throat with rise of temperature and was in a regimental aid post for five days; he then returned to duty though feeling far from well. After a further period of five days he was admitted to a local hospital owing to shortness of breath and a recurrence of sore throat and during this time was given small doses of luminal amounting in all to about eight grains. He then developed a blotchy rash on his hands and feet which later became generalized all over the body. He had some cough and phlegm, headache was intense and there was high swinging fever, the temperature reaching 105° F. During the following days the rash became more intense and was now polymorphic with strong purpuric element present. There was enlargement of all lymphatic glands. The appetite was poor, the bowels constipated and the patient was very acutely ill. The patient was seen at this time by Lieutenant-Colonel Felix Smith, R.A.M.C., who suggested the diagnosis of barbiturate dermatitis.

Other diagnoses considered at this time were: acute leukaemia, Hodgkin's disease, glandular fever, toxic erythema multiforme and the pre-mycotic stage of mycosis fungoides. Some of these were excluded by the following investigations which were done: Paul Bumel test—negative. Blood Wassermann reaction—negative. Total white cell count—16,400. Polymorphs 34 per cent, lymphocytes 60 per cent, monocytes 4 per cent, eosinophils 2 per cent. Pathological investigation of urine—negative.

Such was the situation at time of transfer to the military hospital. Physical examination after arrival showed no evident anemia. Conjunctivitis was marked and the throat injected with a hemorrhagic rash on the buccal mucous membrane. There was an extensive erythematous and purpuric rash on the trunk and limbs, exfoliating on the face with cracks and sores on the lips. The tongue was smooth with atrophic papille. Manifest oedema of the extremities was present with much tenderness of the palms of the hands and soles of the feet. The cardiovascular system was normal and the blood-pressure 120/90. The lungs showed generalized bronchitis. The spleen was not felt. All lymphatic glands in neck, axillae and
groins were moderately enlarged. The central nervous system was normal. The urine contained no sugar or albumin. On admission the temperature was 102° F. and the pulse-rate 98.

On February 28, 1943, the blood count was as follows: Red blood cells 4,855,000; haemoglobin 86 per cent; white blood cells 11,800; polymorphs 31 per cent, lymphocytes 27 per cent, eosinophils 30 per cent, monocytes 11 per cent, platelets 261,590. Blood group A11. Capillary resistance test—normal. Marrow puncture—normal. X-ray examination of chest—"generalized bronchitis."

By March 4, 1943, the general condition had considerably deteriorated with continued pyrexia and extensive exfoliation of the skin on hands, forearms and face. The presence of cheilosis associated with atrophic glossitis and skin rash of pellagrous type suggested the possibility of therapy with vitamin 2B. Nicotinic acid was therefore given, the patient taking 500 mgm. daily. Within forty-eight hours there was a dramatic improvement in his condition; the temperature dropped to normal and he appeared noticeably less weak. During the next few days exfoliation of the skin proceeded but the temperature remained normal and the general improvement was maintained. The urine contained a trace of albumin but there were no casts present. The glandular enlargement was no longer apparent.

On March 12, 1943, the eyelids became extremely inflamed with multiple styes which soon were discharging pus. At the same time a large carbuncle developed on the right hip. There followed multiple boils all over the body, the incidence being greatest in the axillae and groins. These persisted for some weeks and a number of them required incision. The axillae and groins were dusted with a sulphonamide powder and, during this period brewer's yeast and marmite were taken, together with ascorbic acid 100 mgm. daily.

By April 12, 1943, the septic condition of the skin had improved. There was considerable loss of hair and the nails were shed but the patient's condition generally was satisfactory. The blood count was: Red blood cells 4,410,000; white blood cells 5,800; polymorphs 52 per cent, lymphocytes 32 per cent, eosinophils 9 per cent, monocytes 6 per cent.

A skin sensitivity test for phenobarbitone subsequently performed gave a positive result.

Comment.—Exfoliative dermatitis is a rare but serious complication of phenobarbitone administration. In hospitals where the drug is widely used the possibility of such complication should be remembered. Of twelve recorded cases in the literature nine terminated fatally. In the present instance the apparent benefit derived from nicotinic acid therapy is considered noteworthy.

My thanks are due to Colonel G. P. Kidd, M.C., for his permission to record this case.

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