"One solution gives the reactions for both metaphenylenediamine and paraphenylenediamine; the other is a solution of hydrogen peroxide.

"Paraphenylenediamine is commonly used as a hair dye, and injurious effects on workpeople engaged in the manufacture of this compound are attributed to the diamine itself and to its oxidation products.

"Metaphenylenediamine possesses marked poisonous properties, its physiological action resembling that of the leucomaines and ptomaines. An authority states that a dose of 0.1 gram per kilo body weight produced salivation, vomiting, diarrhoea, and abundant excretion of urine in dogs and subsequent death by coma. Symptoms similar to those of intense influenza were also produced in addition to the more severe effects.

"Phenylenediamine derivatives are used in the production of dyes for furs and are commonly used in the preparation of brown dyes."

Three months have elapsed since the report was received, and by avoiding exposure to further risk of absorption, the patient has had no return of his illness.

The case adds further evidence of the peculiarly selective action of phenylenediamine, and seems to suggest the existence of a class of people who are extremely susceptible to its ill effects and who need not necessarily show any lesions of the skin. This is important, for bottles of this dye are issued in boxes containing notices warning people to test its effect on a small area of skin before using it, and are advised not to use it at all if a reddening of the skin results some hours after the experiment is made.

The action of the dye as a systemic poison may be delayed, for in this case a day and a half intervened between the last exposure and the onset of symptoms; as it was due to this delayed action that he had never associated his symptoms with his occupation, the question arises whether others may not be upsetting their health to a greater or less extent by dyeing their hair and moustaches.

It would appear from recent literature* on the subject of fur dermatitis that the toxic phenylenediamine becomes non-toxic when oxidized by hydrogen peroxide; Bandrowski's base, which is formed, is an insoluble colouring matter which can be eaten by experimental animals without ill effects, but apparently the phenylenediamine is not always completely oxidized, and to prevent the furs remaining toxic they are washed for from seven to eight hours; it is only when the washing has been scamped that the furs are toxic and cause dermatitis.

A similar process is used in hair dyeing; the hydrogen peroxide and the phenylenediamine are mixed, and the resulting solution is applied to the hair, but unfortunately a temptation exists not to wash too thoroughly as the washing may spoil the colour. Worse still, some who dye themselves apply the solutions separately, by which means they obtain a finer and more lasting colour, but attended probably by greater risk of a toxic result.

If careless men dye heavy moustaches in this manner, and women with similarly dyed hair hold tresses of it between their lips whilst dressing, the possibility of poisoning is increased. So long, therefore, as people are willing to use this dye in quantity, elderly-looking people with suspiciously dark brown hair may occasionally be met with whose paroxysmal tachycardia or indigestion, whose palpitation or liverishness, or whose symptoms of gastric influenza will disappear if they will stop dyeing their hair.

But perhaps the most serious aspect of this case is the medico-legal one, for it cannot be doubted that this man was not far from death on the night he fell unconscious, and if he had been found dead, and an inquest had been held, would the true cause of death have been ascertained?

TWO CASES OF ERYTHEMA NODOSUM WITH TUBERCULOUS BACILLAEMIA.

BY

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PROFESSOR CALMETTE in his recent great work on *Tuberculosis in Man and Animals* affirms that erythema nodosum is caused by a bacillaemia. In 1913 Landouzy and Loederich, by grinding up and inoculating a nodule of erythema nodo-

* See EPITOME (para. 61), BRITISH MEDICAL JOURNAL, January 19th, 1924.

sum excised from a living patient succeeded in transmitting tuberculosis to a guinea-pig. This experimental proof was later corroborated by Hildebrandt, who infected a guinea-pig by inoculation with the fluid from a node. Much clinical evidence has accumulated in favour of the same view. Dr. H. J. Vetlesen, Christiania, has reviewed and summarized the literature and added a study of the records of his own hospital. H. Ernberg, at the first Northern Congress of Pediatrics in Copenhagen in 1919, reported an investigation into the fate of children who had suffered from erythema nodosum; of 35 who had so suffered between the years 1908 and 1914, he personally examined 31 during the winter of 1916-17. Not one had developed rheumatic fever or any sign of rheumatism, whereas in 13 cases symptoms of tuberculosis had supervened and one had died of miliary tuberculosis. In most the tuberculous symptoms had appeared during the first months or year after the outbreak of erythema nodosum. In a further clinical study of 55 cases he made an x-ray examination of the chest in 39, and found extensive tuberculous lesions due to active disease in 35. The remaining 4 showed no radiographic changes in the lungs, but 2 had tuberculous glands of the neck and 2 subsequently developed phlyctenular conjunctivitis.

The two cases we report were striking because both occurred in a small mining village in Derbyshire within a few months of each other. Both showed extensive tuberculous infiltration of the lungs, and one has died of tuberculous meningitis. From Calmette's researches we know that tuberculous meningitis is never the result of a primary infection, but is a haematogenous infection nearly always caused by the pouring into the circulation of a quantity of bacilli through the rupture of caseated tubercles in the peribronchial or mediastinal lymph nodes in a subject recently and intensely infected, and who has not acquired any immunity against tuberculosis. The boy who died we know to have been in intimate daily personal contact with an aunt living in the adjoining house, who has since died from pulmonary tuberculosis. Both cases, too, had a long febrile illness marked by pallor, which could only be accounted for by an extensive infection.

CASE I.

A boy, aged 9, who previously had had good health, was taken ill at the beginning of February, 1923, and was found to be suffering from erythema nodosum. The rash appeared on the extensor aspect of both legs, the nodes being numerous and of moderate size (about a shilling). They underwent the usual changes of colour—red, livid, brownish—and as some faded fresh nodes appeared. The erythema was very persistent and lasted four or five weeks. The urine was free from albumin at this time. On February 24th his temperature was 101.8°, and it did not fall below 99° until March 15th, only becoming normal about April 25th. Early in April his urine was examined and was found to contain a small amount of albumin. A Widal test was found to be negative. About April 22nd he had pain with each breath on the right side of his chest. This lasted for about three days, but no pleural rub was heard. On May 11th he was found to have distinct loss of resonance and defective air entry over the lower half of the right lung. A radiograph showed dense opacities in the lower half of the right lung and mottling of the upper half, radiating out from the hilus. The left base also showed considerable opacity.

From the beginning of his illness and for some time before the patient had complained of persistent headache, and it was feared tuberculous meningitis would develop. There was a temporary improvement during May, but in June his condition got worse. At first he was irritable, then he became drowsy. Vomiting occurred on June 26th. On June 28th he was admitted to the Derbyshire Royal Infirmary under Dr. Barber, who found him drowsy, but irritable when roused. The abdomen was retracted and there was a well marked Kernig sign. The pulse rate during the first week varied between 72 and 96, and during the second week between 112 and 160. There was a remittent temperature up to about 101°. The respirations were between 24 and 28 until the last two days. Lumbar puncture was performed three times, the fluid was clear under pressure, no organisms were found, but there was a fair number of cells present, a few of which were polymorphs. The boy died on July 11th. There was no post-mortem examination.

CASE II.

A boy, aged 13, residing in the same village as Case i, was seen first on August 10th, 1923, when he was said to have had a rash on his legs for about a fortnight and a cough for five weeks. His temperature was then 101.8°, pulse 96. He had marked erythema nodosum and the rash had the same characters and distribution as in Case i, except that the duration was much shorter. The urine was normal. A faint systolic murmur was heard at the apex. On August 13th he was found to have impaired resonance over the upper half of the left lung, harsh respiratory murmur, but no moist sounds. A radiograph taken on the same date showed diffuse opacity of the upper half of the left lung. By August 18th the

erythema had cleared up, but he continued to run a temperature and grow paler. He had headache at the onset of his illness. He improved, but although he said he felt all right he was very easily fatigued. He was advised to have sanatorium treatment, and was admitted to the Derbyshire County Sanatorium on October 24th. Dr. Niven Robertson, physician superintendent, reports his condition as follows:

"Cheeks flushed, pale waxy skin round the mouth, thyroid slightly enlarged, phlyctenule on the right eye at 9 o'clock on the limbus. Right Kronig's area $1\frac{1}{4}$ inches, left Kronig $1\frac{1}{2}$ inch. Marked loss of resonance upper part of left lung, no adventitious sounds. X-ray examination shows well marked hilus shadows on both sides and dense triangular shadow at the left apex resembling 'pneumonic triangle.'

"Quantitative von Pirquet Test, November 8th, 1923: 64, 16, 4, 1 per cent., all well marked positive. Latterly the scarified areas closely resembled erythema nodosum patches.

"Arneft Count, November 22nd, 1923: 23, 41, 32, 4, 0; left-hand drift: positive.

"Spengler's Precipitation Test:

Specific precipitation	...	1 in 100,000, positive.
Bovine precipitation	...	1 in 100,000, positive.
Auto-precipitation	...	1 in 100,000, positive."

REFERENCE.

¹ *Tubercle*, June, 1922.

A CASE OF ERYTHROEDEMA POLYNEURITICA.

BY

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ACCORDING to Drs. Donald Paterson and Greenfield,¹ who have recently published an account of five cases of this uncommon disease, the chief characteristics of the malady are: (1) the age incidence—it occurs in young children from 4 months to 3 years of age; (2) erythroedema—coldness, redness, swelling, and irritation of the extremities; (3) sweating, associated with a mouse-like odour; (4) alopecia; (5) insomnia and mental depression; (6) muscular hypotonia; (7) partial loss of sensation. Two of these cases died, and *post-mortem* examination revealed marked degeneration of the peripheral nerves with evidence of inflammatory changes in the spinal cord.

Diphtherial neuritis, avitaminosis, and infection have been suggested as causes; Paterson and Greenfield incline to the last view. There is some evidence that the cases follow influenzal epidemics.

When the paper referred to above was published the following case was under observation in the Children's Hospital of the Leicester Royal Infirmary.

M., aged 3, was sent to the out-patient department by Dr. Garrett of Earl Shilton, Leicestershire, on August 22nd, 1923, suffering from sleeplessness, sweating, and weakness. She was a full-time infant, and the labour had been normal. There were four other children, all well, and the parents were healthy. The patient had had no previous illnesses. She had walked and talked at 12 months; teething had commenced at 10 months. The present symptoms had come on gradually during the preceding eight weeks. In addition to the sweating, sleeplessness, and weakness, she had "gone off her legs," and her hands had been cold and red. There had been much crying. The appetite had considerably decreased. Just before the symptoms commenced the patient had suffered from a severe "cold on the chest." The child had been breast-fed until 18 months; she was then weaned and put on to cow's milk, various foods being added until she was having 1 pint of milk, milk puddings, egg, fish, bread, butter, jam, potatoes, and gravy.

The patient was quite well nourished, and walked fairly well (Fig. 1). The arms and legs were red, swollen, and cold, but although they looked oedematous they did not pit on pressure. There was extreme muscular atony, and the limbs could be placed in all sorts of bizarre positions as is shown in the photographs (Figs. 2, 3), which remind one of amyotonia congenita. No abdominal reflexes or knee-jerks could be obtained, but the ankle-jerks were present. There was marked alopecia in the temporal regions. The urine showed no gross abnormality.

FIG. 1.

The patient was admitted for further investigation. While in the ward she was placid, but abnormally quiet and still, and her hands seemed painful. No definite sensory loss was ascertained. A fort-

FIG. 2.

night after admission she had for a week irregular pyrexia, for which no cause could be found; the highest temperature was 100° F., otherwise the temperature was subnormal but irregular. The systolic blood pressure was 110 mm. Hg, diastolic 80. The vasomotor paralysis and amyotonia suggested that the chromaffin tissue was affected, but 10 grams of glucose by the mouth produced no glycosuria, and 20 grams only a trace of sugar in the urine. (The weight of the child was 23 lb.) The blood sugar was 0.1 per cent. Swabs from the nose and fauces showed on culture the presence of Hoffmann's bacillus in large numbers; there were no true diphtheria bacilli. The redness and coldness of the extremities was apparently uninfluenced by the temperature of the air.

The treatment given was general massage, under which the patient slowly but surely improved. By October 23rd both knee-jerks were obtainable, and the limbs could not be placed in

FIG. 3.

abnormal positions. The child's mental attitude was much brighter, and the erythroedema was markedly less. She was discharged on October 30th very much improved.

It will be seen that this case corresponds very closely to those described by Paterson and Greenfield. The only differences were the absence of any demonstrable sensory loss and of any distinctive odour.

REFERENCE.

¹ *Quart. Journ. of Med.*, October, 1923.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

DIATHERMY IN LUPUS OF SOFT PALATE AND FAUCES.

THE treatment of lupus by diathermy appears to be more frequently employed in France than in England. I have used it in intranasal lupus with very satisfactory results, and the following case shows the effects in lupus of the throat.

A. L., a woman aged 26, was first seen in March, 1923. She gave a history of stiffness and soreness of the throat for six months, with some pain when swallowing. She also had a cough. The whole of the soft palate and fauces were affected by lupus, which spread from there over the pharynx and involved it for 1 to $1\frac{1}{4}$ inches from above downwards. Ulceration had taken place on and in the region of the uvula. The posterior surface of the soft palate was free from disease, and there were no signs of any mischief in the lungs.

On March 27th, under a general anaesthetic, the greater part of the diseased area was treated with the small button electrode. A fairly strong current was employed, and the electrode moved somewhat rapidly over the diseased parts so that superficial coagulation was obtained with little injury to the deeper tissues. Throughout the application the fact that it was better to do too little than too much was kept in mind. On April 17th a further application was made, and on healing being completed only one or two small points of disease remained.

She was prevented by her work from attending hospital again till November, when it was found that the diseased patches which were seen after healing in May had enlarged considerably, but no fresh infection had occurred in the healed area. On November 20th she was again treated, and all the affected area appeared perfectly healthy after healing was completed, except one minute patch, consisting of five or six apple-jelly nodules, on the left posterior faucial pillar. These were treated under local anaesthesia.