considerable size. I have myself removed by abdominal panhysterectomy a uterus which reached above the umbilicus, and whose cavity was filled with that cheesy purulent material so frequently seen in cancer of the uterine body. Cancer may develop in the body of a myomatous uterus. It is not uncommon to find after removing the uterus that the two diseases coexist. A myomatous uterus containing in its interior a sloughing polypus may easily be confounded with cancer. Exploratory dilatation of the uterine cavity will in the majority of cases settle the diagnosis. A microscopical examination of any tissue removed from the interior of the organ will aid in doubtful cases. Moreover it is well to have obtained your patient's permission to do hysterectomy if necessary, and so avoid the necessity of a second operation.

In conclusion, it may be stated that any enlargement of the uterus found after the menopause should be carefully watched, and if it increases the organ should be removed.

ACUTE LEAD POISONING IN WOMEN RESULTING FROM THE USE OF DIACHYLON AS AN ABORTIFACIENT.

By W. WRANGHAM, M.D.LOND.,

Assistant Medical Officer, South Yorkshire Asylum, Wadsley.

It is now nearly eight years ago since Dr. Pope of Leicester published the notes of two cases of lead poisoning in women caused by taking diachylon pills, both of which ended fatally. Since that date cases have been recorded by Dr. Crooke,¹ Dr. C. B. Taylor² and Dr. Branson,³ and finally, a year ago, Dr. Ransom⁴ published an article dealing with the subject, and giving notes of several cases. The subject, therefore, is no new one, and my reason for publishing these cases is partly on account of the severity of the type and the rather unusual symptoms which some of them presented, and partly to emphasise the fact that, in the cases of lead poisoning in women, diachylon as a possible cause must always be remembered.

That the consumption of this preparation for illegal purposes is prevalent in the districts of Leicester, Nottingham, and Birmingham I think there can be no doubt from the cases that have been recognised there. It would now appear that this pernicious practice is carried on in Sheffield, for the fifth case in my series occurred in this town.

For permission to make use of the notes of Cases III and IV I am indebted to Dr. Pope, and of Case II to Dr. Headley Neale.

CASE I.—M. A. C., a single woman, aged 22, was admitted into the Leicester Infirmary on June 7th, 1898, suffering from blindness and loss of power in arms and legs.

History.—Patient says she had a child a few weeks ago: she is not certain of the date, but she was very ill after it, and for a week previously. She was not conscious of what was happening until May 29th, 1898. When she "woke up" on May 29th, she was not able to tell by touch "glass from wood, or wood from anything else." She was not able to raise her hand at the wrist at all, and was quite blind. She had been in the habit of taking three pills a day since October, 1897, until this illness (which began apparently about March, 1898). Then she was away from work for eight weeks. During the greater part of this time she was in bed owing to severe attacks of pain in the abdomen, which came on suddenly and doubled her up. Soon after this she was confined. Since then the abdominal pains have been less frequent, and have now been absent for some time. The blindness, she says, came on since her confinement. At the time of her confinement she is said to have had convulsions.

State on Admission.—The most noticeable features in the patient's condition were the ocular symptoms and the extreme general weakness. There was considerable proptosis of the right eye, and the lids only just came together when she closed it. There was great weakness of all the ocular muscles. On the left side the globe was almost immobile; on the right the movements were only slightly less limited, for although there was some power in an upward and downward direction, there was very slight movement to the inner side, and none outwards. The pupils were dilated; the left contracted to light; the right did not, but varied in size on attempting to move the eyes. The right eye was quite blind; in the left there was perception of light, but fingers could not be counted. On examination of the fundus, intense papillitis was found in both eyes, and a few quite small retinal hemorrhages. The media were clear.

There was extreme muscular weakness, and the patient was unable to stand unsupported. There was wasting of the muscles about the shoulder joint, and of the thenar and hypothenar eminences. The extensors of the wrist were very weak, causing wrist drop. In the legs, the extensors of the feet were weak, and there was much flabbiness of all the muscles of the limbs. In the left hand, sensation to touch was defective over the thumb; there was an oblique line of hyperæsthesia in the palm, and beyond this impairment again, with delayed sensation. Painful stimuli were readily felt. In the right hand there was delayed sensation, and some irregular hyperæsthesia. In the feet and legs there was great de-

ficiency in localisation, a touch on the foot sometimes being referred to the thigh. The superficial reflexes were for the most part exaggerated. The knee-jerks and elbow-jerks were absent on both sides. Her mental condition was dull, and her memory defective. There was a very definite blue-black line on both gums (which had quite disappeared by July 4th).

During her stay in the infirmary she suffered from pains in the abdomen, limbs, and head and neck. On one occasion she had a hysterical emotional outburst. She was discharged relieved on September 10th, 1898, having regained almost complete power in the affected muscles. Her eyes, however, had suffered irreparable damage. There was no longer any ocular palsy, but vision in the right eye was restricted to perception of light; with the left eye she could count fingers at a distance of a metre. There was consecutive atrophy in both eyes, with much distortion of the right disc.

The child of this woman was born at about full term, removed from the mother, and brought up carefully by hand. It lived a month, and at death only weighed 2 lbs. 11½ ozs. An inquest was held. The liver and kidneys were examined for lead, but none was detected.

CASE II.—R. B., married, aged 24, was admitted into the Leicester Infirmary on June 25th, 1898, complaining of pain in the head, sickness, and failing sight.

History.—Patient first felt ill on May 29th, 1898, when she had a bad bilious attack which lasted a fortnight. She had much pain in the head, neck, and shoulders, and was continually vomiting green, bitter material. She took but little food, and that was returned almost immediately. These symptoms all came on suddenly. The attacks of vomiting continued at frequent intervals for four weeks. There was not much abdominal pain, and none of a colicky nature. She had weakness of the right hand and arm, so that she was unable to grasp things properly or to fully extend the wrist. The left hand and arm were hardly, if at all, affected. She had only noticed that her sight was failing a day or two before. Patient admitted that she had been taking lead pills for a fortnight before her illness began, and continued to take them until June 14th, on which date she had a miscarriage. She thinks she was pregnant about a month. She had three children living who were well, and had never previously had a miscarriage.

State on Examination.—There was paresis of the external rectus muscle of the right eye, causing internal squint and diplopia. In the left eye the muscles were unaffected. The pupils were of equal size, and reacted normally to light and on accommodation. Optic neuritis was found in both eyes, the discs being red and swollen, and the edges indistinct. No retinal hemorrhages were seen. The grasp of both hands was weak, the right being most affected. There was no wrist-drop or foot-drop. The knee-jerks could not be elicited. There was a well-marked bluish-black deposit under the gums at the alveolar margin, and also under the mucous membrane of the lower lip. The pulse was slow, 56 to the minute, full, but compressible; the tongue was furred, and there was considerable anæmia.

Progress.—On the fourth day after admission she became delirious, being talkative and noisy, sleepless, quite irrational, and was constantly getting out of bed or trying to do so. Her mental condition improved in a few days, and on July 8th she left the infirmary at her own request. The grasp of the hands was a little stronger, but the knee-jerks were still absent. The blue line was still very marked.

As a result of the inquest on M. A. C.'s child, the police took the matter up, and after a time a woman who had given evidence at the inquest and from whom these two patients had obtained pills, was arrested and charged with administering noxious drugs to them for an illegal purpose. The two cases were tried separately. Among the pills seized by the police was one composed of oleate of lead. On both occasions the woman was acquitted.

CASE III.—A. B., a married woman, was admitted into the Leicester Infirmary June 11th, 1899, on account of severe abdominal pain.

History.—Two months before she began to complain of pain in the abdomen and back, which had continued on and off up to the time of admission. At the same time she had gatherings in both hands. She had lost much flesh during this period and had been very constipated. She was blistered on the abdomen with turpentine on June 9th, but with no relief to the pain. The catamenia were regular, except that the last period was a week over time. She had suffered from "growing pains," but had never had rheumatic fever or chorea, or sore throat. Her husband stated it had come to his knowledge some months ago that his wife had been taking some pills to prevent her having any more children. He had remonstrated with her and forbidden her to continue them. Lately he suspected that she had been taking them again.

State on Admission.—She was very weak. The pulse was 90, regular, and of fair volume. The cardiac dulness was not increased, but a slight thrill was felt at the apex, and a short presystolic bruit was detected on auscultation. The knee-jerks were absent; the plantar reflex was present and not exaggerated. The tongue was furred, and a thin blue line was present on the alveolar margin of the gums, particularly noticeable over the right central incisors and upper and lower canines. She spoke in a whisper, and was quietly delirious at times. There was no ocular paralysis or papillitis.

Progress.—Patient continued to be restless and delirious and slept badly. The bowels were constipated. On June 20th the tongue was clean. She had slept well after paraldehyde 3j, and her mental condition seemed somewhat improved.

On June 22nd there was pain in the calves of the legs on pressure, and great weakness of the legs and hands. The knee-jerks were still absent. The pulse was 122. She was delirious again.

On June 26th the pulse-rate had increased to 160 to the minute. The delirium continued. She still spoke in a whisper. No laryngoscopic examination could be made. Breathing was more rapid, the chest moved badly, and there was deficient air entry; moist râles were heard over the lower lobes of both lungs. There was marked weakness of the diaphragm,

and on gently raising the patient up in bed the abdominal muscles remain quite flaccid.

She continued to get worse. The temperature rose to 100.4° F. (hitherto it had never been above 99° F.); profuse sweating came on; she became comatose, respiration and pulse both rapidly failing, and she died on the evening of June 27th.

The following case perhaps ought not to be included with the others as definitely due to diachylon, since I could obtain no history of taking such pills. But I feel justified in regarding it as due to this cause, for the woman was obviously suffering from severe lead poisoning, and there was nothing in her occupation or surroundings to cause it. It is in such a case as this that one is at a loss to account for the symptoms, unless self-administration be remembered. Therefore, even when full allowance is made for the fallacies of a *a priori* argument, I still hold the most probable cause of the lead poisoning was diachylon. The denial of taking such pills counts for very little, since a woman naturally observes secrecy on such a matter. This fact is well illustrated in the last of my cases.

CASE IV.—B.C., aged 21, a glove hand, was admitted into the Leicester Infirmary, June 27th, 1899, for sickness and anaemia.

History.—Patient had had three children; the first was living, the second died when 7 months old, the third when 5 months old. At Easter, three months before, patient had a miscarriage when two months' pregnant. Since that time she had been gradually getting paler and weaker; had been sick after food and had lost flesh. There had been constipation, and she had suffered much from headache and backache. Amenorrhœa had been present since Easter.

State on Admission.—She was anæmic; the tongue was furred, and she was sick after taking milk. She complained of continuous headache. Nothing abnormal was detected in the chest; a loud venous hum was heard in the neck; the pulse was 66, and rather high in tension. Examination of the blood showed:

$$\frac{\text{Hæmoglobin}}{\text{Red corpuscles}} = \frac{50}{84}$$

There was no localised tenderness in the abdomen. A characteristic bluish-black line existed at the margins of the upper and lower gums. The urine contained no albumen. The knee-jerks were absent. There was an alternating internal squint, causing diplopia. The left external rectus was capable of a small amount of movement, but the right was quite paralysed. If, while the left eye was closed, an object was held a short distance external to the vertical plane of the right eye, it was projected by the patient an inch beyond its true position. Examination of the fundi revealed redness, striation, and swelling of both discs, with indistinctness of outline, and inflammation of the retina around the discs. The vessels were tortuous, and the arteries refractile. This condition was more pronounced on the left side.

Progress.—For the first fortnight after admission the sickness continued despite the most careful feeding and treatment. On July 4th menstruation occurred and continued until the 6th; the pulse continued slow, about 60 to the minute. On the 13th the catamenia returned again. For the next fortnight she seemed to improve, was less sick, and better able to take nourishment; but on the morning of the 25th she vomited half a pint of deeply bile-stained watery vomit, and stated that she felt giddy. On the evening of the 26th she had an epileptiform attack, becoming convulsed and cyanosed, the fit lasting for two or three minutes. She was quite conscious up to the time of the convulsion but never regained consciousness. She had another fit at midnight, the arms and legs were drawn up and began to twitch, the head and eyes were first turned to the right and then they changed steadily round to the left; urine was passed during the fit. On July 27th and 28th patient had more slight convulsions, some being general, others only right sided. The temperature, which hitherto had been normal, now oscillated between 100° and 101° F. There was no control over the sphincters. She was obviously becoming exhausted. The pulse was 104, respiration 36. There was rattling of mucus in the throat, rhonchus and coarse râles were heard over the chest. All the muscles were relaxed and flaccid, and the patient died in a state of coma on the evening of July 28th. The urine contained no albumen.

Necropsy. The lungs were congested and œdematous; there was no disease in any of the organs. In the brain the vessels of the arachnoid were engorged, and the centrum ovale somewhat injected. There was nothing else found.

The last patient in this series was admitted on a certificate of unsoundness of mind into the South Yorkshire Asylum. At first it was thought she might be suffering from an intracranial tumour, but there was something in her appearance which reminded me at once of the previous cases—the anæmic and, at the same time jaundiced look; the dilated pupils, the eyes unable to move outwards, and the profound weakness—and, on looking at the gums there was no longer any doubt. In this case the cause of the lead poisoning was not long in being discovered. The husband on being questioned brought up some pills which he asserted his wife had been taking; on examination they were found to consist almost entirely of oleate of lead. Yet the woman had persistently denied having taken any pills.

CASE V.—M. E. F., married, aged 28, was admitted into the South Yorkshire Asylum, Wadsley, on March 7th, 1901.

History (obtained from the husband).—Seven weeks before admission patient imagined herself pregnant, and consulted a midwife, as she did not wish to have any more children. She obtained some pills, which she

took daily. At the end of a fortnight she had to take to bed on account of sickness, pain in the epigastrium, and weakness. She continued in bed for five weeks, until, in fact, she was brought to the asylum. She had had three children, the youngest being 6 years old.

State on Admission.—She was restless, had hallucinations of sight, attempting to pick things off her dress, and heard imaginary voices. She was in a very weak condition, and could not walk without assistance. The pulse was 140, and irregular; there was a trace of albumen in the urine; the skin had an icteric tint, and there was a pronounced slaty blue line on both gums. There was diplopia, with much impairment of vision, and an alternating internal squint caused by paresis of both external recti. The pupils were equal and dilated, and reacted sluggishly to light. On examination of the fundi, intense double optic neuritis was found, with inflammation of the adjacent retina; there were two small hæmorrhages just above the right disc, and both maculae were inflamed. General muscular weakness existed; the grasp of the hands was feeble, and the power of wrist extension was impaired though not lost. The legs were weak, and she dragged them in walking (when assisted). The knee-jerks were present.

Progress.—She was sent to bed, but was restless, and slept badly, and was in a frightened condition, fearing she would not recover. At times she conversed quite sensibly, and could give fair particulars of her illness. She improved after a time, and then hallucinations of sight again reappeared, with fear of falling down steps, and similar delusions. After April 1st she made rapid headway, taking her food well, and putting on flesh. By April 5th power had returned in both external recti, so that she could turn both eyes outwards without squinting, but occasionally, if the eyes were fatigued, the squint reappeared. Vision was R. = $\frac{1}{2}$, and L. = $\frac{1}{2}$, with no scotoma in either eye; with the ophthalmoscope the discs were found to be less swollen and hyperæmic; there was some stippling around the right macula. The blue line on the gums was replaced by blackish puncta. The urine was free from albumen. Her mental condition was clear, and she was now considered almost completely recovered.

In all these cases the effect of the poison was manifested chiefly in the nervous system, although gastro-intestinal trouble and abdominal pain were also present. The ocular symptoms were particularly noticeable, no fewer than four of the patients presenting optic neuritis and ocular paralysis. The former condition, when present, is rightly regarded as indicative of danger, and in all the cases exhibiting it mental disturbance was present, although convulsions only occurred in Cases I and IV, in the latter rapidly proving fatal. Involvement of the ocular muscles seems to be a much rarer occurrence. Dr. Buzzard has recorded a case of paralysis of the third nerve, and one of Dr. Ransom's patients had weakness of the external rectus of one eye. Yet, out of these five patients four suffered from ocular paralysis. Case I had almost complete external ophthalmoplegia; Cases IV and V presented sixth nerve palsy on both sides, and Case II had paralysis of the right sixth nerve only. These cases are too few to draw any definite conclusion from, but they suggest the fact that the sixth is, of the ocular nerves, especially vulnerable to lead. Such a selective action is familiar in the antibrachial, brachial, and Aran-Duchenne types of lead palsy. Case III died with symptoms of an acute multiple neuritis, the paralysis extending from the limbs to the muscles of the trunk and diaphragm, and involving probably also the pneumogastriacs.

Another fact which is well brought out is the length of the incubation period of lead, if one may use the term, for although large quantities of the metal were ingested, it was some weeks before serious symptoms appeared. These, again, persisted, or even grew worse after the patients had ceased taking the pills.

The question of combating this practice is a serious one. The ethical side may be disregarded here, but that some effort should be made to protect women from permanent injury or death at their own hands, or from the advice of so-called "midwives," must surely be granted. Moreover, not only do the mothers themselves suffer, but the children, when born alive, frequently succumb early. The Home Secretary expects notification of cases of lead poisoning resulting from industrial occupations. Why should the notification of cases be restricted to industrial forms? If all cases of lead poisoning were notified to the district medical officer of health, the latter would no doubt be able to estimate which were the result of illegal practices.

REFERENCES.

¹ *Lancet*, July, 1898. ² *Lancet*, September, 1898. ³ *BRITISH MEDICAL JOURNAL*, December, 1899. ⁴ *BRITISH MEDICAL JOURNAL*, June, 1900.

THE Canadian Tuberculosis Association has recommended to the Canadian Government restrictions similar to those recently issued by the United States Superintendent of Immigration in refusing to allow into the United States immigrants suffering from tuberculosis.