after canterization a posterior irrigation with 1 in 4,000 mercury oxycyanide should be given to avoid any danger of secondary infection.

The treatment of urethritis in the female is similar to that in the male, except that with posterior irrigation a female catheter takes the place of a Wyndham-Powell nozzle. The anterior urethra should be well washed out with the catheter before the catheter is passed on to the bladder. For vaginitis, douchings of 1 in 4,000 permanganate are employed, which may be followed by tamponage with iodoform gauze.

Cervicitis should be treated by swabbing the cervical canal with pledgets of cotton-wool soaked in a solution of sodium bicarbonate. In this way the tenacious mucus is removed, so that the bactericidal drug can be brought into direct contact with the infected surface. Occasionally curettage of the canal is advantageous. The cervical canal is now swabbed with liniment of iodine or a strong solution of silver nitrate.

Gonorrhoeal inflammation of Bartholin's glands is treated by incision or excision of the gland. Total excision is usually recommended, and care must be taken, when possible, to remove the gland intact. If the duct only is infected, incision is sufficient.

REFERENCES.

¹ *Traité de la Blennorrhagie*, by Georges Luys, translated by A. Foerster. ² *A Manual of Venereal Diseases*, second edition, by Officers of R.A.M.C.

A CASE OF OTITIC MENINGITIS AND CEREBELLAR ABSCESS, WITH RECOVERY.

BY

A. E. BARNES, M.R.C.P.,

PHYSICIAN, ROYAL INFIRMARY, SHEFFIELD;

AND

W. S. KERR, F.R.C.S. EDIN.,

SURGEON IN CHARGE OF THE EAR, NOSE, AND THROAT DEPARTMENT, ROYAL INFIRMARY, SHEFFIELD.

RECOVERY in cases of otitic meningitis is sufficiently rare to merit publication when it occurs. The case recorded below illustrates the possibility of recovery when all the classical signs of the disease have become established, and are even further complicated by the presence of a cerebellar abscess.

History.

A. D., a girl of 17, was seen by one of us in consultation on the evening of August 13th. A week previously she had complained of severe occipital headache which had gradually become worse, until within the previous forty-eight hours delirium, high fever, and other signs of meningitis had supervened. There was an offensive discharge from the right ear, but the mother of the patient was emphatic that the discharge had commenced since the illness began. Subsequent inquiries from the patient have failed to elicit a history extending more than a week previous to the commencement of the illness. On examination the patient presented a typical picture of acute meningitis. She was semiconscious, but could be roused, when she immediately complained of pain in the head and back. There had been vomiting throughout the day. The pulse was 108, temperature 103° F., marked head retraction, definite Kernig's sign, and general hyperaesthesia. There was no ocular palsy and no nystagmus, but the optic discs were very red and the veins were distended. An attempt at lumbar puncture had failed, owing to the rigidity and restlessness. She was at once sent to the Royal Infirmary, where a second attempt at lumbar puncture was also unsuccessful. The next day the ears were carefully examined, and she was submitted to operation. It had been thought that the otitis might have been secondary to cerebro-spinal meningitis, but the examination showed that there must undoubtedly have been some old trouble in the middle ear.

Operation.

On August 14th, under a general anaesthetic, a lumbar puncture was performed, and a few drops of turbid cerebro-spinal fluid were obtained with difficulty. A radical mastoid operation was then performed. Pus was present in the antrum, and this was traced back into the posterior fossa, where a large extradural collection of pus was evacuated. The dura in this region was

softened and disintegrated. The bone was widely removed over the posterior fossa, and internally along the posterior surface of the petrous nearly to the internal auditory meatus.

After-Course.

On the following day the right external rectus was seen to be paralysed. The patient progressed favourably for some time, the meningeal symptoms gradually subsiding, although the temperature remained raised and variable until August 23rd, when it fell to normal. This continued for five days, when she began to complain again of the headache, and on August 29th the temperature rose to 100°, and she vomited twice. The pulse-rate became subnormal, varying between 55 and 70, with occasional rises to 90. The temperature varied between 98° and 100° until September 8th, when it registered 97°. The vomiting continued.

The large bony wound became gradually filled up by a hernia of the cerebellum. Mr. G. H. Pooley kindly examined the fundi, and reported, "No optic neuritis; edges of discs a little blurred," on September 1st. The absence of optic neuritis at this time is probably accounted for by the free decompression.

On September 5th a probe introduced into the hernia allowed a scanty quantity of serous fluid to escape. On September 8th a pus-seeker was introduced into the hernia and an abscess containing about 1½ oz. of thick greenish pus evacuated. A soft rubber drain tube was left *in situ*. The pulse at once improved, and the patient expressed herself as much better and the vomiting abated; after three days, however, it recurred. The pulse remained about 110 and the temperature about normal. The vomiting continued at intervals until the beginning of October, when the tube was removed.

The persistence of the vomiting after the evacuation of the abscess caused considerable difficulty in diagnosis at the time, and was probably due to the presence of the drainage tube. This might have been removed at an earlier date, as the discharge through the tube practically ceased after a few days. It was thought desirable, however, to preserve the track in case future exploration might be necessary. There was such a complete absence of mental disturbance that, in spite of the persistence of the vomiting and of the dysidiadokokinesis, it seemed hardly probable that there was any further intracranial mischief. There was a marked acetone odour in the breath, and this raised the question of "toxic" vomiting. Accordingly, a twenty-four hours specimen of urine was submitted for examination in the clinical laboratory. The result was as follows:

Quantity 312 c.cm. Total nitrogen 3.92 grams, ammonia nitrogen 0.308 gram (ammonia coefficient, therefore, 9.42 per cent.). No albumin, no sugar, slight diacetic acid reaction, but a very strong acetone reaction.

The low total nitrogen illustrates the severity of the vomiting, and renders the coefficient of 9.42 per cent. of no value as an index of toxic acidosis. The hernia quickly subsided, and gradually the wound healed. The paralysis of the right sixth nerve completely disappeared after about a month, and the patient left the infirmary on December 10th.

REMARKS.

Lumbar Puncture.—When, under an anaesthetic, the spinal thecae were at last tapped it was found that there was no evidence of increased pressure, and only a very small quantity of fluid could be obtained. This is sometimes the case in meningitis, and is usually ascribed to the presence of adhesions which prevent the free circulation of the fluid. In our case it may have been due to pressure exerted by the cerebellum in the neighbourhood of the foramen of Magendie. The fluid obtained was sent to the clinical laboratory, and the clinical pathologist (Mr. W. W. King) reported as follows: No reduction of Fehling's fluid, numerous polymorphonuclear leucocytes, endothelial cells and lymphocytes, large number of Gram-positive diplococci, which are found mainly inside the polymorphonuclears, cultures sterile in eighteen hours. A piece of bone removed from the mastoid was submitted to bacteriological examination, and revealed the presence of a mixed infection with staphylococci, streptococci, Gram-positive diplococci, and a Gram-negative motile bacillus rather similar to the *B. pyocyaneus*, but not producing any of the characteristic pigment on subculture.

Diagnosis.—Is there sufficient warrant in these findings for the diagnosis of meningitis as appended to the report

of the case? It must be admitted that not even the presence of pus cells and organisms in the cerebro-spinal fluid are sufficient evidence for a diagnosis of meningitis, as it has been proved that the same may be found in cases of uncomplicated abscess of the brain or in extradural abscess. In the absence of *post-mortem* evidence we cannot be certain that there existed a true meningitis, but the important practical point is that, even when all the classical signs of meningitis are fully developed and are confirmed by the finding of pus cells and organisms in the cerebro-spinal fluid, there is still a possibility of recovery under energetic surgical treatment. No vaccines were used in the treatment of this case.

The Milroy Lectures

ON

THE HYGIENIC ASPECT OF THE COAL-MINING INDUSTRY IN THE UNITED KINGDOM.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

By FRANK SHUFFLEBOTHAM, M.A.,

M.D.CANTAB., J.P.,

MEDICAL REFEREE UNDER THE WORKMEN'S COMPENSATION ACT FOR THE NORTH STAFFORDSHIRE DISTRICT.

LECTURE III.

DUST.

FIBROID lung (such as potters suffer from) is rare amongst coal-miners, and anthracosis does not seem to entail disablement. But while coal dust does not seem to be an irritant of the lung the shale dust and flue dust used in mines to dilute coal dust, with a view to prevent explosions, owing to their siliceous character might adversely affect the coal-miner's lungs. The spraying of mines to render the coal dust less liable to explosion might cause a humidity which, when added to a high temperature and darkness, might be deleterious to the coal-miner's health and prove favourable to the development of ankylostomiasis, now unknown in British coal mines. More than two hundred years ago the importance of dust as one of the principal causes of industrial diseases was recognized by Ramazini, who at that time was the professor of medicine at Modena University. In this country, however, the subject attracted little attention until the middle of the nineteenth century, when the researches of Dr. Greenhow, of the Middlesex Hospital, placed it upon a scientific basis. Other observers, notably Arlidge, Haldane, and Sir Thomas Oliver, have made valuable contributions to the subject. In coal mines siliceous dust is produced when new workings are opened up and when new roadways are cut out, but in well established mines the vast majority of workers only came in contact with coal dust.

The Coal Mines Regulation Act has not only been to some extent instrumental in diminishing the number of accidents in mines, but it has done something equally important in another direction. Prior to the passing of this Act, one of the principal diseases from which miners suffered was fibrosis of the lungs, or miner's phthisis, and Dr. Greenhow's collection of miners' lungs in the museum of the Middlesex Hospital shows that this disease was in many cases the actual cause of death. The statistics of the Registrar-General also show that the mortality figure for miners from diseases of the respiratory system was at one time very much greater than it is now. At the present time in Great Britain fibrosis of the lung among miners can be said to be practically non-existent, and its disappearance can be wholly attributed to the enforced improvements in the ventilation of mines, to improvements in illumination, and to shorter working hours. The evidence given before the Departmental Committee on Industrial Diseases, which sat in 1906 and 1907, was practically unanimous on these points. Professor Murray, of Manchester, who for many years was consulting physician to the North of England United Coalowners' Association, and also physician to the Royal Victoria Infirmary,

Newcastle-upon-Tyne, stated that he had never seen a case of fibrosis of the lungs in miners, and Sir Thomas Oliver said that there had not been a case of miner's phthisis in the Newcastle-upon-Tyne Royal Infirmary for more than ten years; similar evidence was given by other medical men with large experience of colliery practice. Though fibroid phthisis does not affect coal-miners at the present time in this country, still anthracosis, or infiltration of the lung with coal dust, is widely found. I have already mentioned that workers who are employed in making new roads in the mine may be exposed to the inhalation of siliceous dust, and in the ganister mines of Durham, Yorkshire, and other counties the irritating nature of the rock dust produces fibrosis of an aggravated type.

TUBERCULOSIS AMONG COAL-MINERS.

Tuberculosis of the lungs is not so commonly found among coal-miners as among many other occupations, and the statistics of the Registrar-General with regard to mortality from this cause show that while the mortality figure for all occupied males in England and Wales is 175, that for the coal-miner is only 85; metalliferous miners, however, are not so fortunate in this respect, the figure for the Cornish tin-miner being 838 (the highest on the list of all occupations), the copper-miner 501, and the lead-miner 344. With regard to other diseases of the respiratory system, while the mortality figure for all occupied males is 78, that for the coal-miner is 140. The copper-miner heads the list with 665, the tin-miner coming second with a mortality figure of 653, while the lead-miner has a mortality figure of 187; the potter and the Sheffield grinder—frequent victims of this disease—are represented by mortality figures of 361 and 173 respectively.

In the United States great attention has been paid to the subject of tuberculosis among coal-miners by Wainwright and Nicholls, whose experience is drawn from observations made in a coal-mining centre with a population of about 100,000 people. They have found that, taking the percentage of deaths from all lung diseases among miners as 100, the following table shows the percentage of the coal-miners and the other occupied males in the district:

	All Lung Diseases.	Tuberculosis of the Lungs.	Asthma	Pneumonia.
Coal-miners	100	14	29	42
Other occupied males	114	41	7	54

They hold that "miner's asthma" is clinically chronic bronchitis and emphysema, and that it is associated with epithelial irritation and thickening of the connective tissue and consequent loss of elasticity.

It has been asserted by many authorities that coal dust has germicidal properties, and in favour of this view we have the experience of colliery surgeons who record that extensive wounds full of coal dust heal rapidly, and even lacerated wounds sustained through injuries in coal mines can be stitched up without hesitation; veterinary surgeons have similar experience in the treatment of pit ponies. As a result of their experiments Wainwright and Nicholls dismissed the theory that coal dust possesses any germicidal property; they believe that coal dust in the lungs does exert a real protective influence against the tubercle bacilli, but that the reduced mortality from tuberculosis is not due to any antiseptic property of the coal dust but to its stimulating effect on the lung tissue and increased growth of connective tissue. Among other experiments they kept guinea-pigs for two months in an atmosphere of coal dust and afterwards a pure culture of tubercle bacilli was injected. Animals were treated similarly who had not been subjected to the coal dust. They found that in the latter cases tubercle was found in the lung on *post-mortem* examination, but that in the former case no tubercles could be detected. Nicholls advances the theory that the protective influence of the coal dust is due to the action of the soluble calcium salts which form a large proportion of the ash of the coal dust.

Ganister Lung.

The mining of ganister—a hard, close-grained siliceous stone obtained from under the coal seam—is carried out in